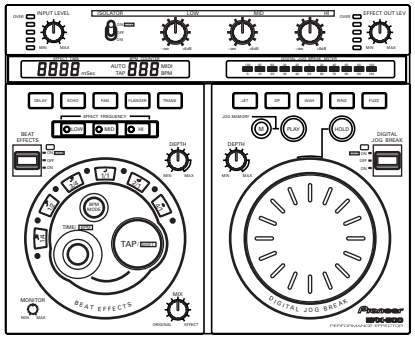
# Service Manual



ORDER NO.
**RRV2082**

## EFFECTOR
# EFX-500

### THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Type | Model | Power Requirement | The voltage can be converted by the following method. |
|---|---|---|---|
| | EFX-500 | | |
| KUC | O | AC120V | ——— |
| WY | O | AC220 - 240V | ——— |
| RL | O | AC110 - 120V/AC220 -240V | With the voltage selector |

## CONTENTS


1. SAFETY INFORMATION ..... 2
2. EXPLODED VIEWS AND PARTS LIST ..... 3
3. SCHEMATIC DIAGRAM ..... 8
4. PCB CONNECTION DIAGRAM ..... 20
5. PCB PARTS LIST ..... 28
6. ADJUSTMENT ..... 30
7. GENERAL INFORMATION ..... 31
   7.1DIAGNOSIS ..... 31
      7.1.1 DISASSEMBLY ..... 31
      7.1.2 TEST MODE ..... 34
   7.2 BLOCK DIAGRAM ..... 36
8. PANEL FACILITIES AND SPECIFICATIONS .. 37



**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
**PIONEER ELECTRONICS SERVICE, INC.** P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
**PIONEER ELECTRONIC (EUROPE) N.V.** Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
**PIONEER ELECTRONICS ASIACENTRE PTE. LTD.** 253 Alexandra Road, #04-01, Singapore 159936


**©PIONEER ELECTRONIC CORPORATION 1998**



T – ZZY DEC. 1998 Printed in Japan

# 1. SAFETY INFORMATION

**This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.**
**Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.**

**WARNING**
**This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.**

**Health & Safety Code Section 25249.6 – Proposition 65**

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

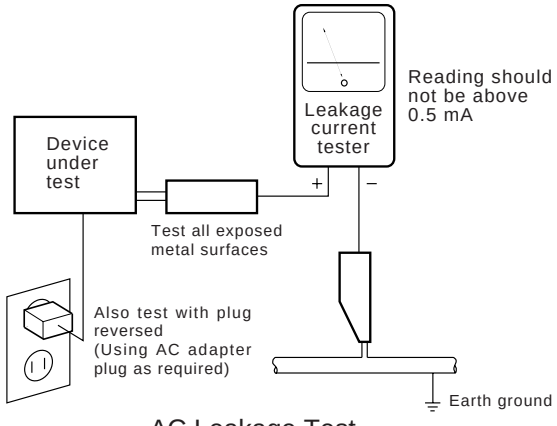
## (FOR USA MODEL ONLY)

### 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

**LEAKAGE CURRENT CHECK**

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Leakage current tester
Reading should not be above 0.5 mA
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

### 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage , etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

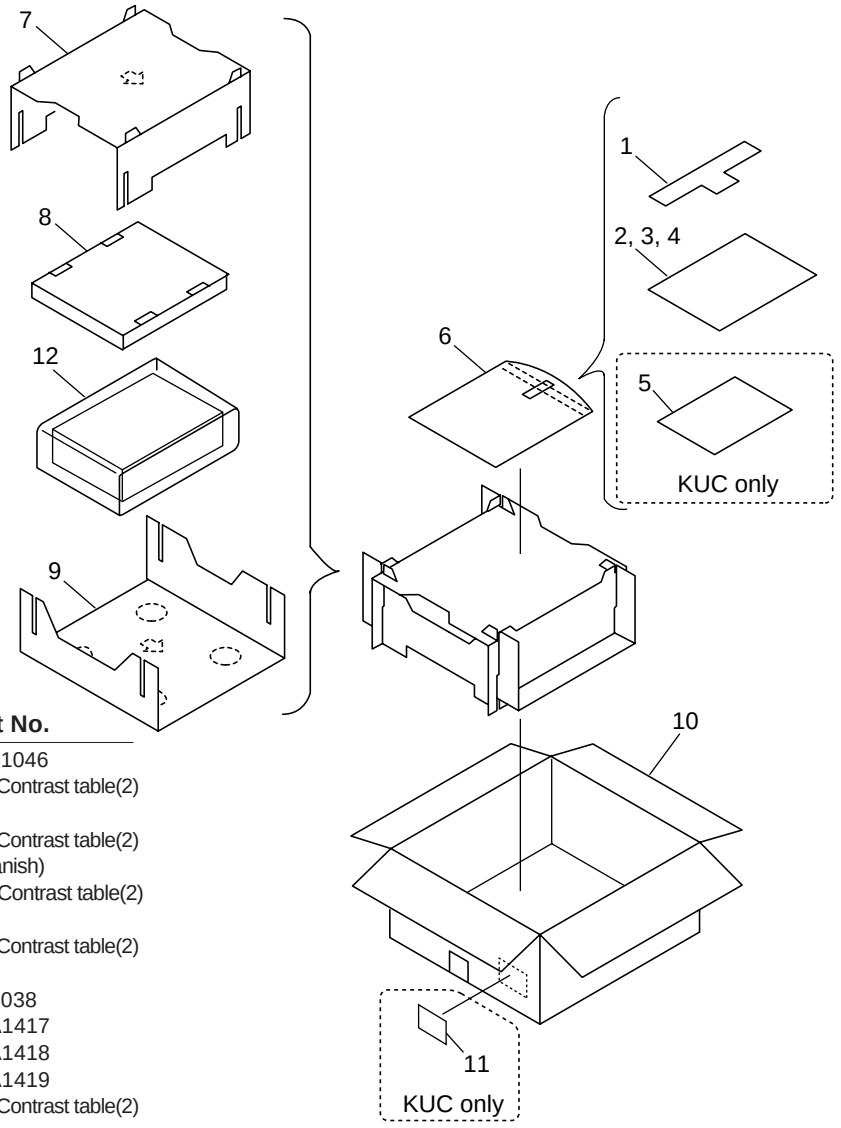
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

# 2. EXPLODED VIEWS AND PARTS LIST

*NOTES :*
- *Parts marked by " NSP " are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screw adjacent to ▼ mark on the product are used for disassembly.*

## 2.1 PACKING




### (1) PACKING PARTS LIST

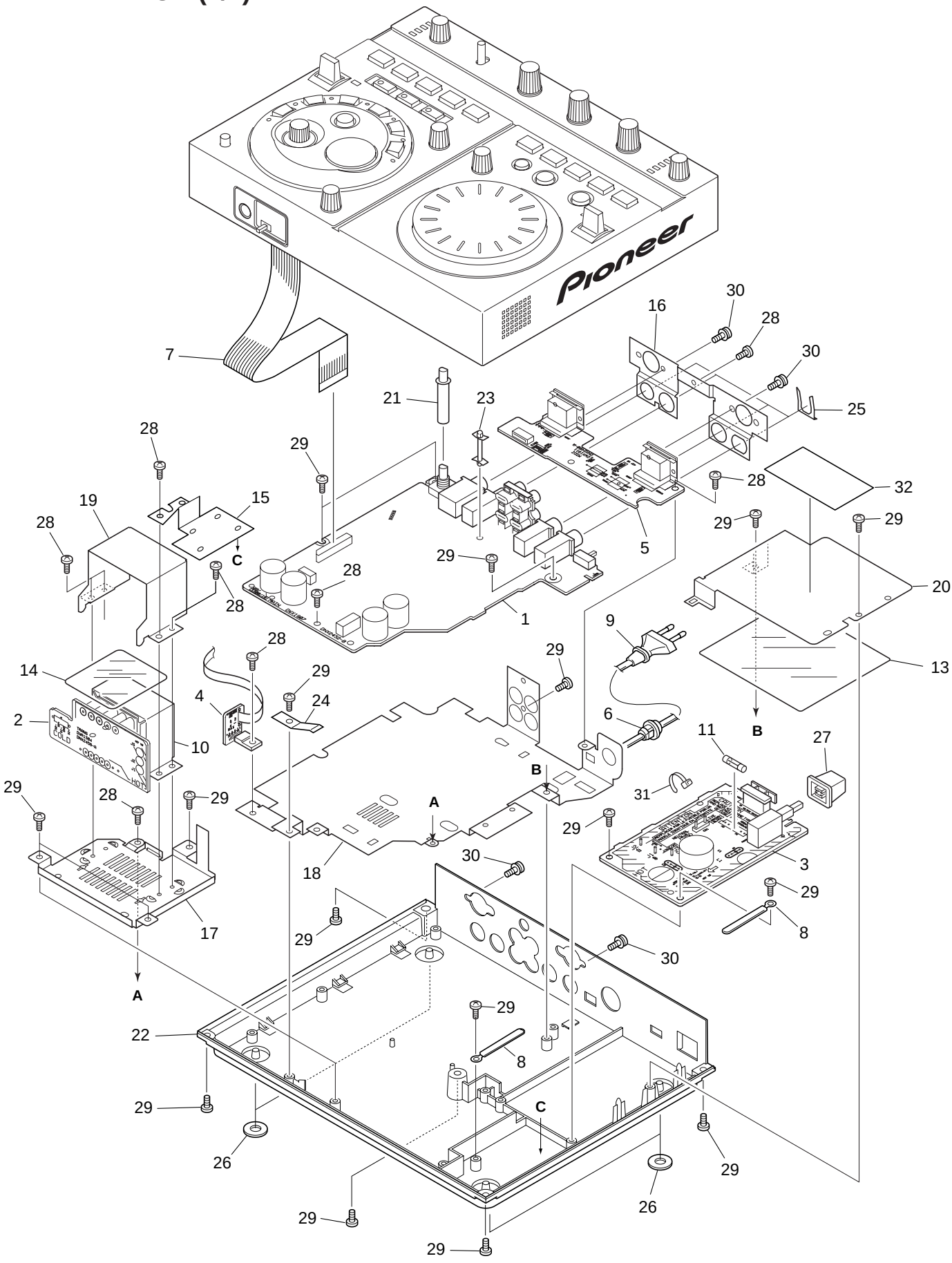
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | Guide Plate | DAP1046 |
| | 2 | Operating Instructions (English) | See Contrast table(2) |
| | 3 | Operating Instructions (English/French/German/Italian/Dutch/Spanish) | See Contrast table(2) |
| | 4 | Operating Instructions (English/Spanish/Chinese) | See Contrast table(2) |
| NSP | 5 | Warranty Card | See Contrast table(2) |
| | 6 | Polyethylene Bag | Z21-038 |
| | 7 | Pad A | DHA1417 |
| | 8 | Pad B | DHA1418 |
| | 9 | Pad C | DHA1419 |
| | 10 | Packing Case | See Contrast table(2) |
| NSP | 11 | Label | See Contrast table(2) |
| | 12 | Sheet (550 x 550 x 0.5) | Z23-026 |

### (2) CONTRAST TABLE

WY, RL and KUC are constructed the same except for the following:

| Mark | No. | Symbol and Description | Part No. | | | Remarks |
|---|---|---|---|---|---|---|
| | | | KUC type | WY type | RL type | |
| | 2 | Operating Instructions (English) | DRB1237 | Not used | Not used | |
| | 3 | Operating Instructions (English/French/German/Italian/ Dutch/Spanish) | Not used | DRB1236 | Not used | |
| | 4 | Operating Instructions (English/Spanish/Chinese) | Not used | Not used | DRB1238 | |
| NSP | 5 | Warranty Card | DRY1177 | Not used | Not used | |
| | 10 | Packing Case | DHG1873 | DHG1870 | DHG1872 | |
| NSP | 11 | Label | VRW1629 | Not used | Not used | |

## 2.2 EXTERIOR (1/2)



## (1) EXTERIOR (1/2) PARTS LIST

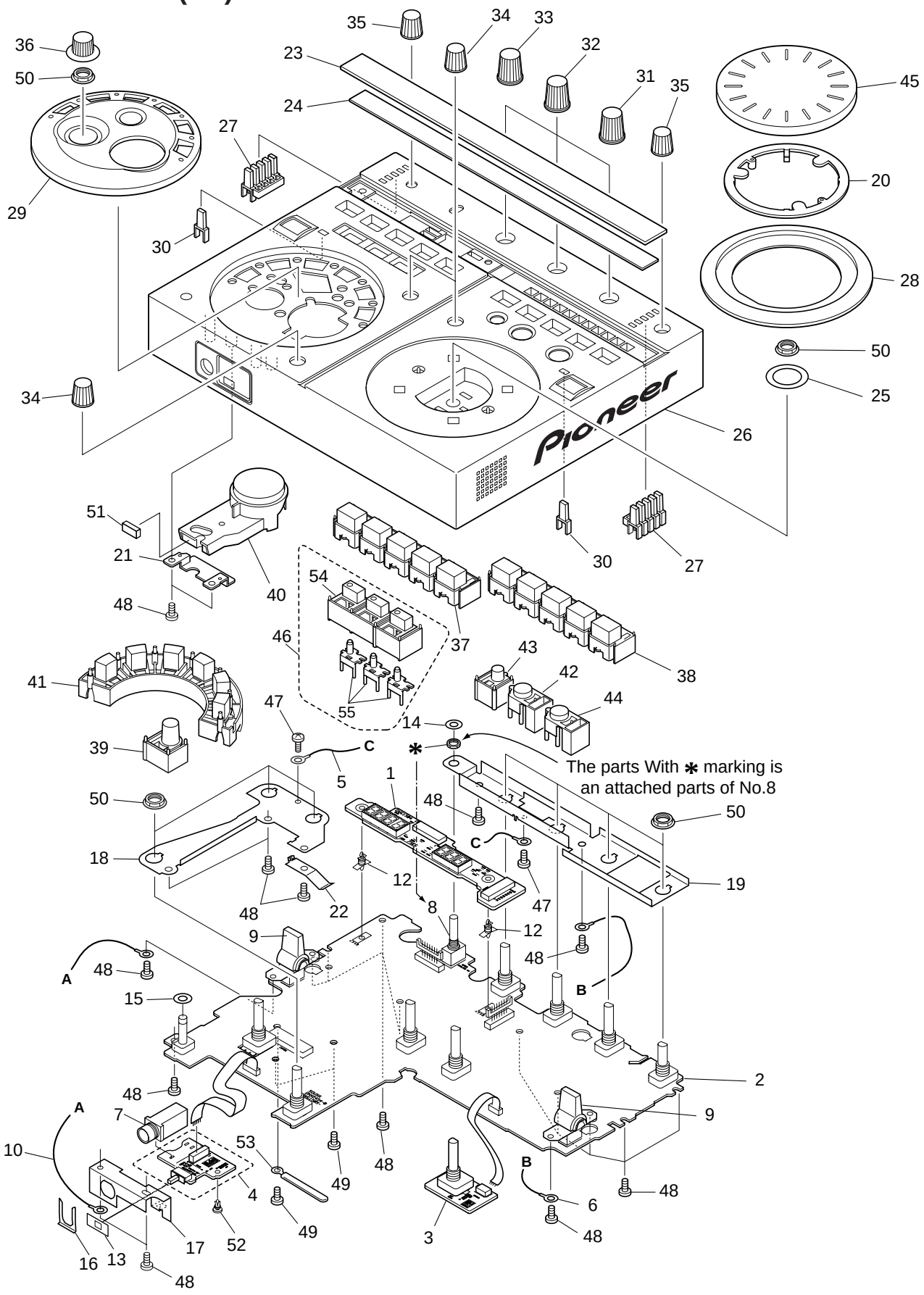
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | MAIN BOARD ASSY | DWX1907 |
| NSP | 2 | TRANS BOARD ASSY | DWR1304 |
| NSP | 3 | POWER BOARD ASSY | See Contrast table(2) |
| NSP | 4 | REG BOARD ASSY | DWX1910 |
| | 5 | MIDI BOARD ASSY | DWX1911 |
| ⚠ | 6 | Cord stopper | See Contrast table(2) |
| | 7 | 22P F.F.C/60V | DDD1137 |
| NSP | 8 | Binder | Z09-061 |
| ⚠ | 9 | AC Power Cord | See Contrast table(2) |
| ⚠ | 10 | Power Transformer | See Contrast table(2) |
| ⚠ | 11 | Fuse (FU1) | See Contrast table(2) |
| | 12 | • • • • • | |
| | 13 | Power Sheet | DEC2271 |
| | 14 | Trans Sheet | DEC2280 |
| | 15 | Shield Sheet | DEC2285 |
| | 16 | Rear Plate | DNF1592 |
| | 17 | Trans Plate | DNF1596 |
| | 18 | Shield | DNH2350 |
| | 19 | Trans Shield | DNH2351 |
| | 20 | Power Shield | DNH2358 |
| | 21 | Shaft | DNK3600 |
| NSP | 22 | Chassis | See Contrast table(2) |
| NSP | 23 | PCB Holder | REC1220 |
| | 24 | Earth Plate | VBK1070 |
| | 25 | Snap Plate | VNE1102 |
| | 26 | Insulator | DEC2235 |
| | 27 | Power Knob | DAC1904 |
| | 28 | Screw | BBZ30P060FMC |
| | 29 | Screw | BPZ30P080FZK |
| | 30 | Screw | PMH30P080FMC |
| | 31 | Binder | See Contrast table(2) |
| | 32 | 65 Label | See Contrast table(2) |

## (2) CONTRAST TABLE

WY, RL and KUC types are constructed the same except for the following:

| Mark | No. | Symbol and Description | Part No. | | | Remarks |
|---|---|---|---|---|---|---|
| | | | KUC type | WY type | RL type | |
| NSP | 3 | POWER BOARD ASSY | DWR1305 | DWR1305 | DWR1303 | |
| ⚠ | 6 | Cord stopper | CM-22C | CM-22B | CM-22B | |
| ⚠ | 9 | AC Power Cord | PDG1063 | PDG1003 | PDG1003 | |
| ⚠ | 10 | Power Transformer (AC120V) | DTT1152 | Not used | Not used | |
| ⚠ | 10 | Power Transformer (AC220- 240V) | Not used | DTT1154 | Not used | |
| ⚠ | 10 | Power Transformer (AC110-120V/220-240V) | Not used | Not used | DTT1153 | |
| ⚠ | 11 | Fuse (FU1: 500mA/125V) | VEK1009 | Not used | Not used | |
| ⚠ | 11 | Fuse (FU1: T250mA/L250V) | Not used | AEK1048 | AEK1048 | |
| | 22 | Chassis | DNK3603 | DNK3599 | DNK3605 | |
| | 31 | Binder | Not used | PEC-107 | Not used | |
| | 32 | 65 Label | DRW1927 | Not used | Not used | |

## 2.2 EXTERIOR (2/2)



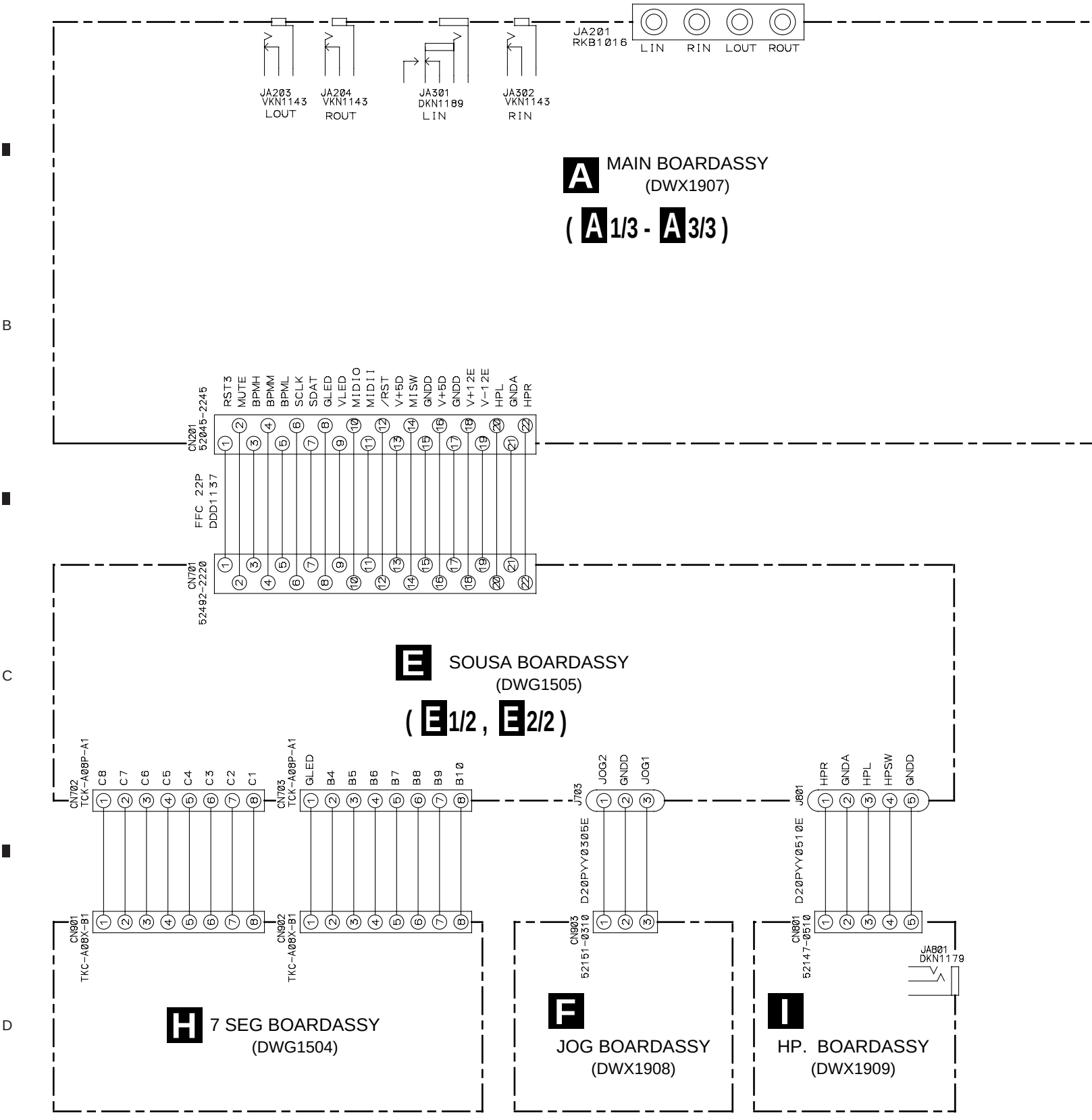
## (1) EXTERIOR (2/2) PARTS LIST

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | 7SEG BOARD ASSY | DWG1504 |
| | 2 | SOUSA BOARD ASSY | DWG1505 |
| NSP | 3 | JOG BOARD ASSY | DWX1908 |
| | 4 | HP. ASSY | DWX1909 |
| | 5 | Earth Lead Unit | DDF1011 |
| | 6 | Earth Lead Unit/ 300V | DDF1015 |
| | 7 | Headphone Jack | DKN1179 |
| | 8 | Lever Switch | DSK1015 |
| | 9 | Lever Switch | DSK1016 |
| | 10 | Earth Lead Unit/ 300V | PDF1087 |
| | 11 | ..... | |
| | 12 | Spacer | DEC2263 |
| | 13 | Slide SW Packing | DEC2281 |
| | 14 | Lever Switch Packing | DED1120 |
| | 15 | Lever VR Packing | DED1137 |
| | 16 | Mount Plate | DNE1370 |
| | 17 | HP Angle | DNF1593 |
| | 18 | VR Angle A | DNF1594 |
| | 19 | VR Angle B | DNF1595 |
| | 20 | POM Ring | DNK3598 |
| | 21 | TAP Plate | DNK3608 |
| | 22 | Earth Plate | VBK1070 |
| | 23 | Plate A | DAH1912 |
| | 24 | Plate B | DAH1897 |
| | 25 | Jog Washer | DBF1001 |
| | 26 | Control Panel | DNK3650 |
| | 27 | Level Indicator | DNK3594 |
| | 28 | Ring Plate | DNK3595 |
| | 29 | Escasion | DNK3596 |
| | 30 | Lens B | DNK3601 |

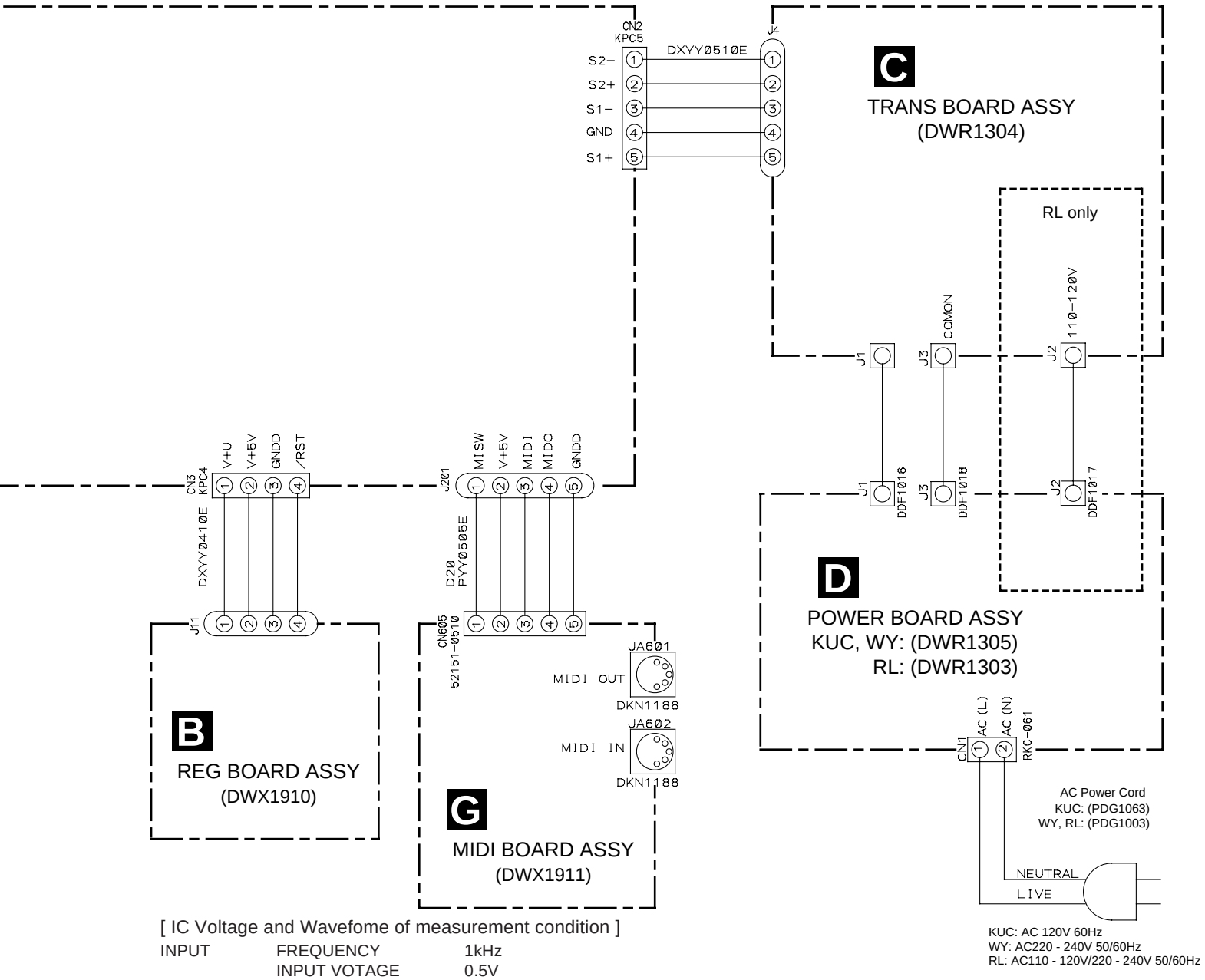
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 31 | Rotary VR knob G | DAA1133 |
| | 32 | Rotary VR knob GY | DAA1139 |
| | 33 | Rotary VR knob GG | DAA1140 |
| | 34 | Rotary Knob A | DAA1141 |
| | 35 | Rotary Knob B | DAA1142 |
| | 36 | Rotary Knob C | DAA1143 |
| | 37 | Knob A | DAC1896 |
| | 38 | Knob B | DAH1897 |
| | 39 | BPM Mode Knob | DAC1898 |
| | 40 | Tap Knob | DAC1899 |
| | 41 | Knob C | DAC1900 |
| | 42 | Play Knob | DAC1901 |
| | 43 | Memory Knob | DAC1902 |
| | 44 | Hold Knob | DAC1903 |
| | 45 | Jog Dial | DNK3597 |
| | 46 | Knob D Assy | DXA1862 |
| | 47 | Screw | BBZ30P060FMC |
| | 48 | Screw | BPZ30P080FZK |
| | 49 | Screw | BPZ30P120FMC |
| | 50 | Nut (M9) | DBN1004 |
| | 51 | Cushion | DEB1413 |
| | 52 | Rivet (3 x 4.5) | RBM-003 |
| NSP | 53 | Binder | Z09-061 |
| NSP | 54 | Knob D | DAC1905 |
| NSP | 55 | Lens | DNK3592 |

# 3. SCHEMATIC DIAGRAM

## 3.1 OVERALL CONNECTION DIAGRAM



Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".

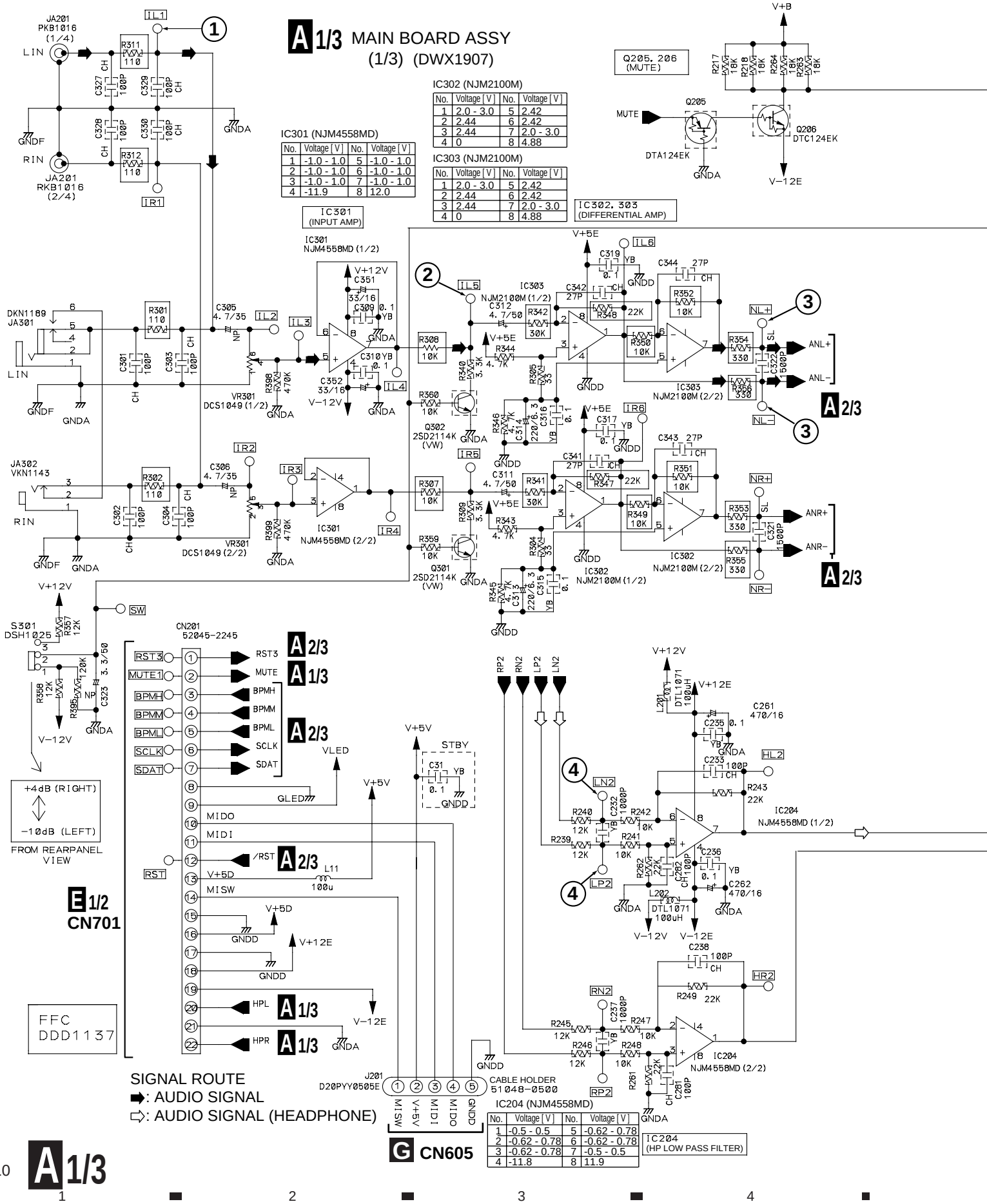



KUC: AC 120V 60Hz
WY: AC220 - 240V 50/60Hz
RL: AC110 - 120V/220 - 240V 50/60Hz

[ IC Voltage and Wavefome of measurement condition ]

| | | |
|---|---|---|
| INPUT | FREQUENCY | 1kHz |
| | INPUT VOTAGE | 0.5V |
| EFX-500 Seting | | |
| | INPUT LEVEL | MAX |
| | BEAT EFFECTS SW | OFF, DELY,1/1, LOW ON, MID ON, HI ON |
| | | DEPTH (MID Center) |
| | | MIX (MID Center) |
| | JOG EFFECTS | OFF, JET, PLAY OFF, HOLD OFF |
| | | DEPTH (MID Center) |
| | ISOLATOR | OFF |
| | | LOW (MID Center) |
| | | MID (MID Center) |
| | | HI (MID Center) |
| | EFFCT OUT LEVEL | MAX |
| | H.P | MONITOR (MAX) |
| | | MASTER |
| | IN / OUT LEVEL | -10dB |

## 3.2 MAIN (1/3) BOARD ASSY

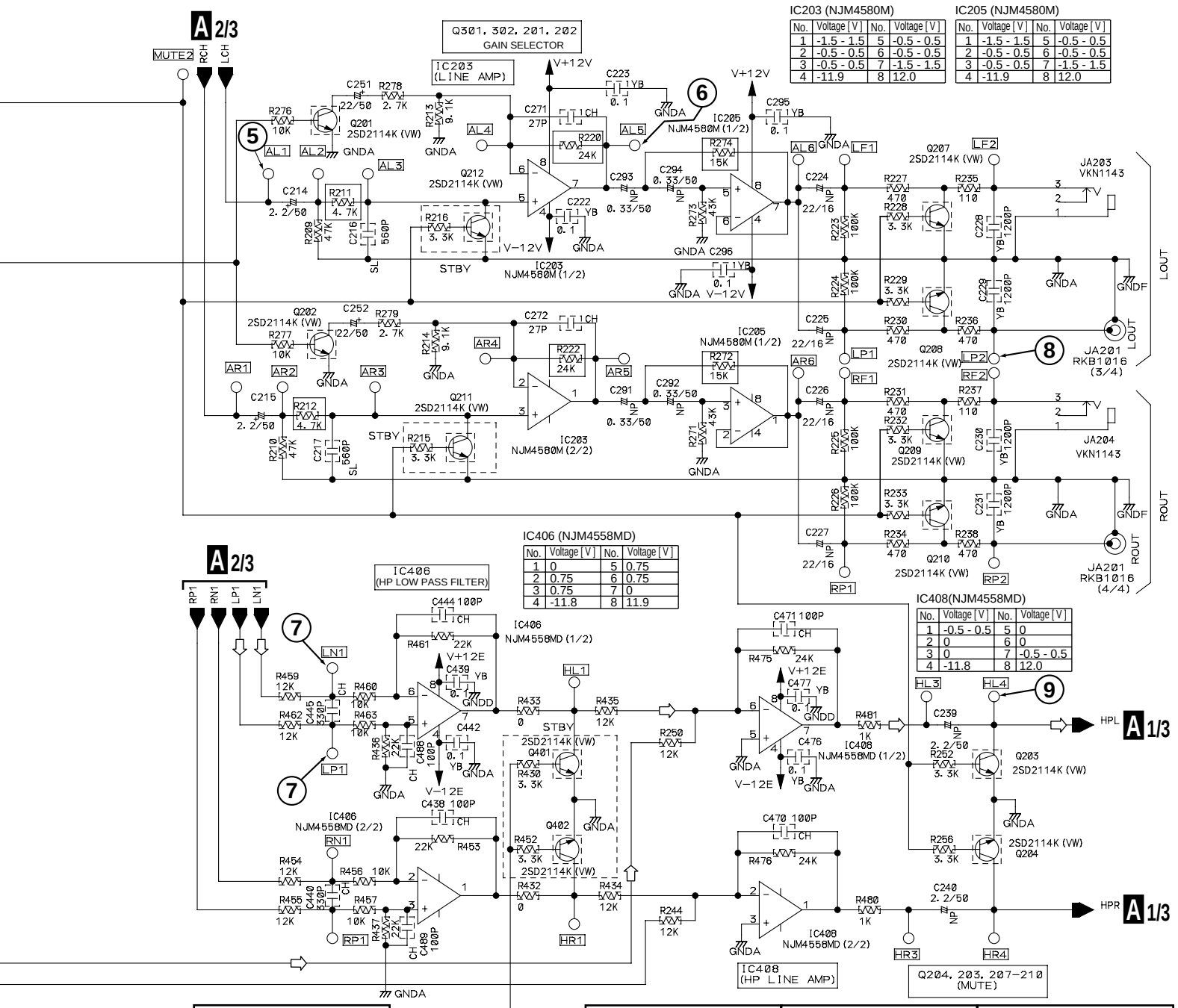



| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | -1.0 - 1.0 | 5 | -1.0 - 1.0 |
| 2 | -1.0 - 1.0 | 6 | -1.0 - 1.0 |
| 3 | -1.0 - 1.0 | 7 | -1.0 - 1.0 |
| 4 | -11.9 | 8 | 12.0 |

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 2.0 - 3.0 | 5 | 2.42 |
| 2 | 2.44 | 6 | 2.42 |
| 3 | 2.44 | 7 | 2.0 - 3.0 |
| 4 | 0 | 8 | 4.88 |

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 2.0 - 3.0 | 5 | 2.42 |
| 2 | 2.44 | 6 | 2.42 |
| 3 | 2.44 | 7 | 2.0 - 3.0 |
| 4 | 0 | 8 | 4.88 |

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | -0.5 - 0.5 | 5 | -0.62 - 0.78 |
| 2 | -0.62 - 0.78 | 6 | -0.62 - 0.78 |
| 3 | -0.62 - 0.78 | 7 | -0.5 - 0.5 |
| 4 | -11.8 | 8 | 11.9 |




IC203 (NJM4580M)

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | -1.5 - 1.5 | 5 | -0.5 - 0.5 |
| 2 | -0.5 - 0.5 | 6 | -0.5 - 0.5 |
| 3 | -0.5 - 0.5 | 7 | -1.5 - 1.5 |
| 4 | -11.9 | 8 | 12.0 |

IC205 (NJM4580M)

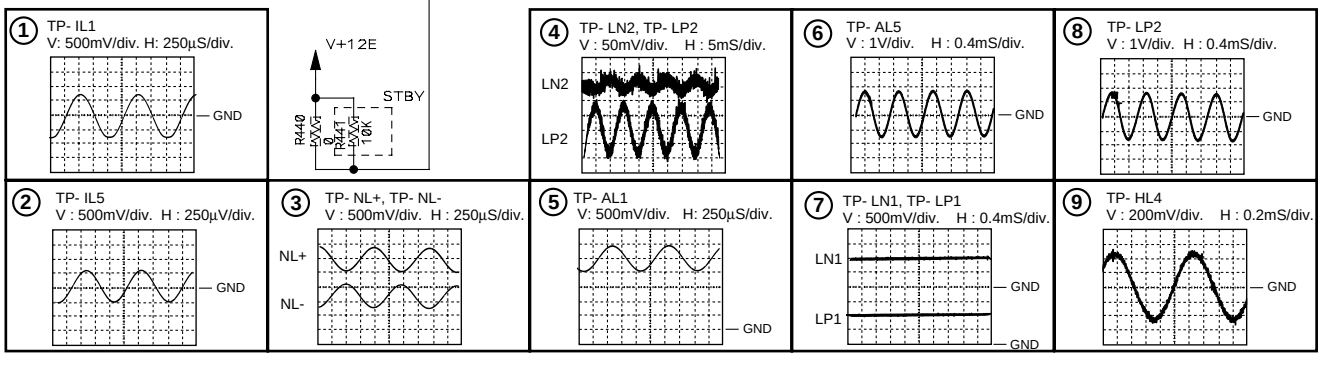
| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | -1.5 - 1.5 | 5 | -0.5 - 0.5 |
| 2 | -0.5 - 0.5 | 6 | -0.5 - 0.5 |
| 3 | -0.5 - 0.5 | 7 | -1.5 - 1.5 |
| 4 | -11.9 | 8 | 12.0 |

IC406 (NJM4558MD)

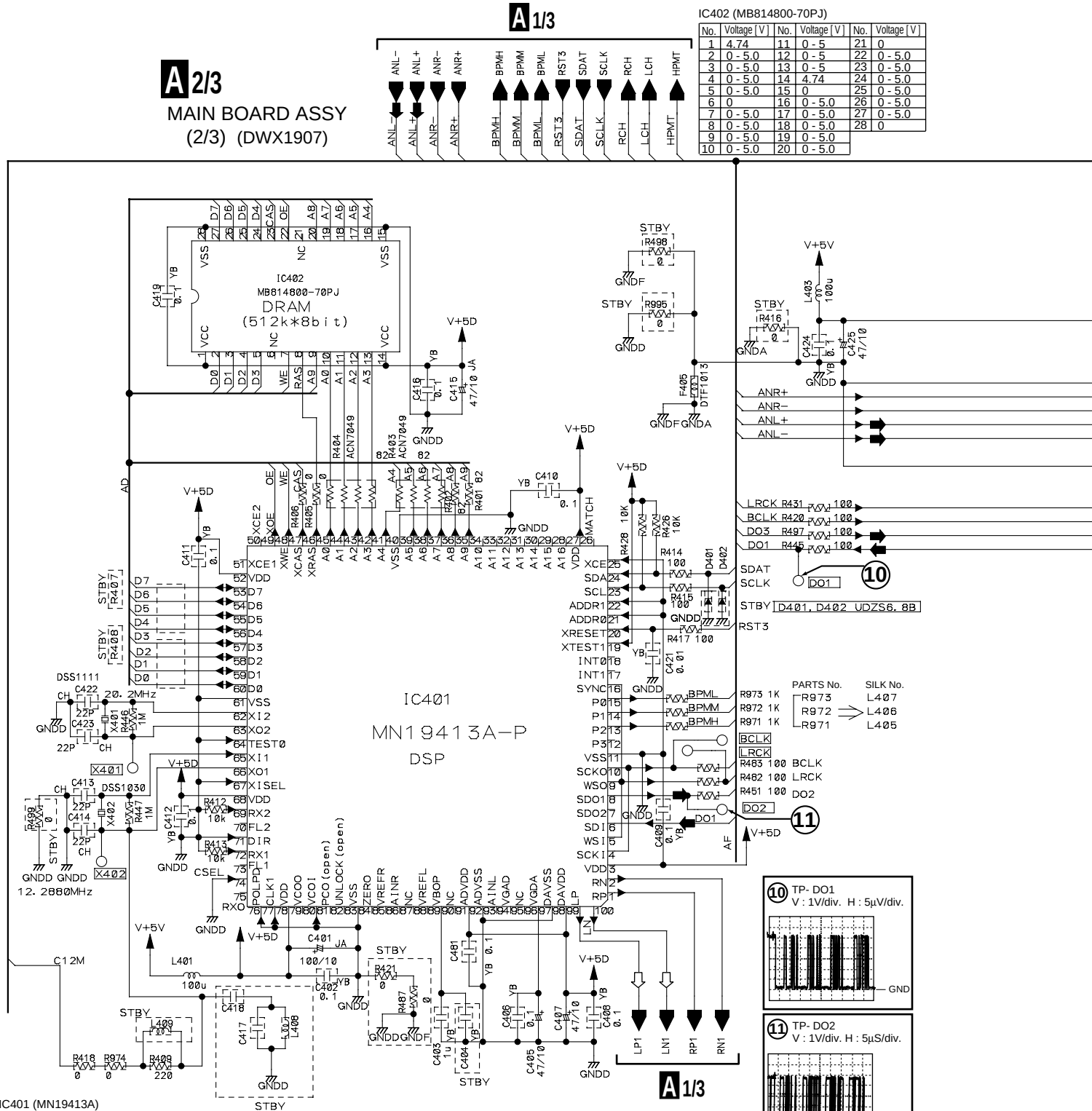
| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 0 | 5 | 0.75 |
| 2 | 0.75 | 6 | 0.75 |
| 3 | 0.75 | 7 | 0 |
| 4 | -11.8 | 8 | 11.9 |

IC408(NJM4558MD)

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | -0.5 - 0.5 | 5 | 0 |
| 2 | 0 | 6 | 0 |
| 3 | 0 | 7 | -0.5 - 0.5 |
| 4 | -11.8 | 8 | 12.0 |



## 3.3 MAIN (2/3) BOARD ASSY




IC402 (MB814800-70PJ)

| No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|---|---|
| 1 | 4.74 | 11 | 0 - 5 | 21 | 0 |
| 2 | 0 - 5.0 | 12 | 0 - 5 | 22 | 0 - 5.0 |
| 3 | 0 - 5.0 | 13 | 0 - 5 | 23 | 0 - 5.0 |
| 4 | 0 - 5.0 | 14 | 4.74 | 24 | 0 - 5.0 |
| 5 | 0 - 5.0 | 15 | 0 | 25 | 0 - 5.0 |
| 6 | 0 | 16 | 0 - 5.0 | 26 | 0 - 5.0 |
| 7 | 0 - 5.0 | 17 | 0 - 5.0 | 27 | 0 - 5.0 |
| 8 | 0 - 5.0 | 18 | 0 - 5.0 | 28 | 0 |
| 9 | 0 - 5.0 | 19 | 0 - 5.0 | | |
| 10 | 0 - 5.0 | 20 | 0 - 5.0 | | |

IC401 (MN19413A)

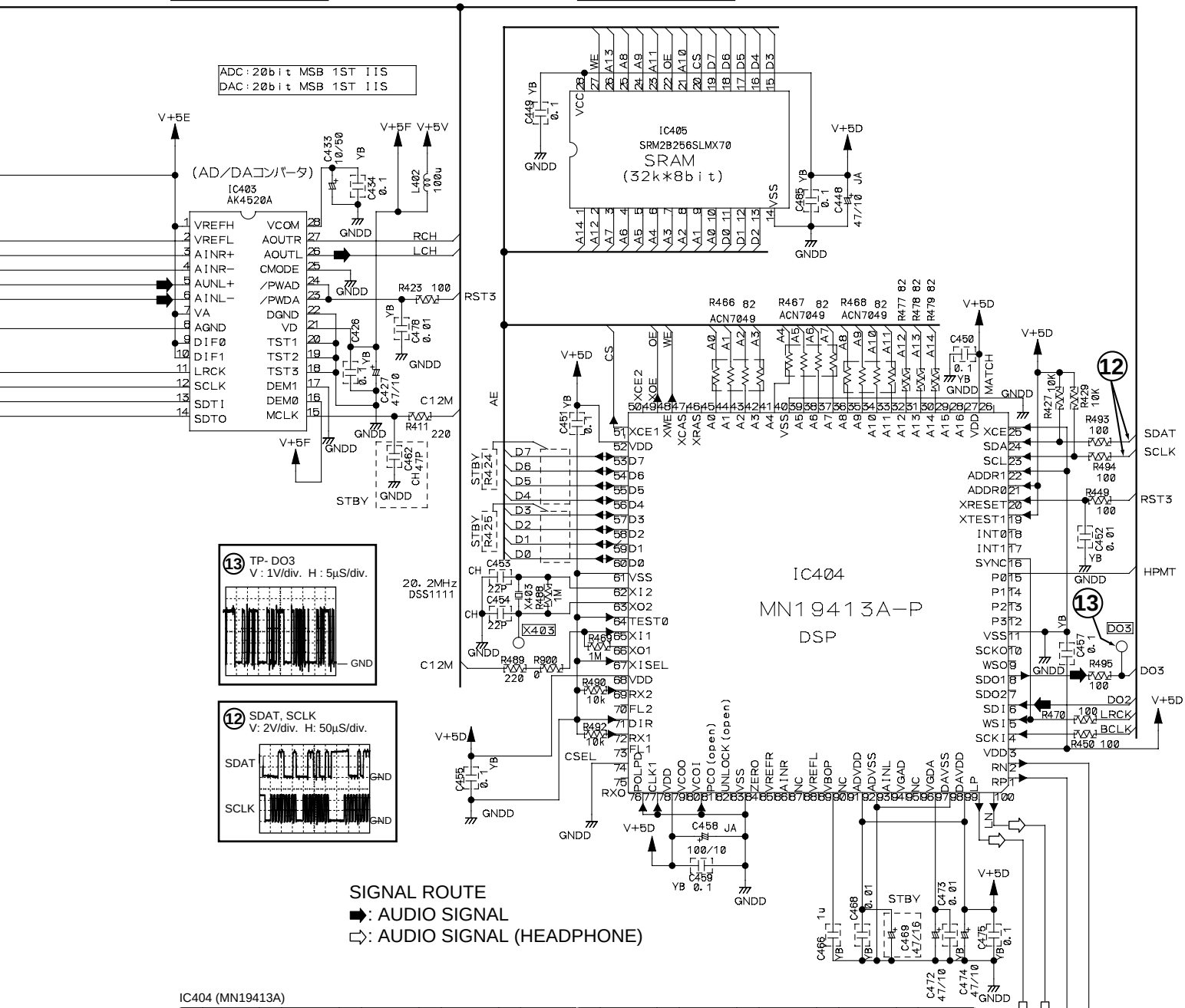
| No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.40 | 11 | 0 | 21 | 0 | 31 | 0 - 5.0 | 41 | 0 - 5.0 | 51 | 4.74 | 61 | 0 | 71 | 0 | 81 | 4.74 | 91 | 4.74 |
| 2 | 1.40 | 12 | 0 | 22 | 0 | 32 | 0 - 5.0 | 42 | 0 - 5.0 | 52 | 4.74 | 62 | 1.0 - 4.0 | 72 | 0 | 82 | 4.74 | 92 | 0 |
| 3 | 1.40 | 13 | 0 | 23 | 0 - 5.0 | 33 | 0 - 5.0 | 43 | 0 - 5.0 | 53 | 0 - 5.0 | 63 | 0 - 5.0 | 73 | 4.74 | 83 | 0 | 93 | 0 |
| 4 | 0 - 5.0 | 14 | 0 - 5.0 | 24 | 0 - 5.0 | 34 | 0 - 5.0 | 44 | 0 - 5.0 | 54 | 0 - 5.0 | 64 | 0 | 74 | 0 | 84 | 4.74 | 94 | 2.40 |
| 5 | 0 - 5.0 | 15 | 0 | 25 | 0 | 35 | 0 - 5.0 | 45 | 0 - 5.0 | 55 | 0 - 5.0 | 65 | 4.74 | 75 | 0 | 85 | 0.96 | 95 | 0 |
| 6 | 0 - 5.0 | 16 | 0 - 5.0 | 26 | 4.74 | 36 | 0 - 5.0 | 46 | 0 - 5.0 | 56 | 0 - 5.0 | 66 | 0 | 76 | 0 | 86 | 0 | 96 | 1.40 |
| 7 | 0 | 17 | 0 | 27 | 4.74 | 37 | 0 - 5.0 | 47 | 0 - 5.0 | 57 | 0 - 5.0 | 67 | 4.74 | 77 | 0 | 87 | 0 | 97 | 0 |
| 8 | 0 - 5.0 | 18 | 0 | 28 | 0 | 38 | 0 - 5.0 | 48 | 0 - 5.0 | 58 | 0 - 5.0 | 68 | 0 | 78 | 4.74 | 88 | 0 | 98 | 4.74 |
| 9 | 0 - 5.0 | 19 | 4.74 | 29 | 0 | 39 | 0 - 5.0 | 49 | 0 - 5.0 | 59 | 0 - 5.0 | 69 | 0 | 79 | 0 | 89 | 2.40 | 99 | 1.40 |
| 10 | 0 - 5.0 | 20 | 4.74 | 30 | 0 | 40 | 0 | 50 | 4.74 | 60 | 0 - 5.0 | 70 | 4.74 | 80 | 0 | 90 | 0 | 100 | 1.40 |

IC403 (AK4520A)

| No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|---|---|
| 1 | 4.88 | 11 | 0 - 5 | 21 | 4.88 |
| 2 | 0 | 12 | 0 - 5 | 22 | 0 |
| 3 | 2.0 - 3.0 | 13 | 0 - 5 | 23 | 4.75 |
| 4 | 2.0 - 3.0 | 14 | 0 - 5 | 24 | 4.75 |
| 5 | 2.0 - 3.0 | 15 | 0.6 - 4.0 | 25 | 0 |
| 6 | 2.0 - 3.0 | 16 | 4.88 | 26 | 2.0 - 3.0 |
| 7 | 4.88 | 17 | 0 | 27 | 2.0 - 3.0 |
| 8 | 0 | 18 | 0 | 28 | 2.4 |
| 9 | 4.88 | 19 | 0 | | |
| 10 | 4.88 | 20 | 0 | | |

IC405(SRM2B256SLMX70)

| No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|---|---|
| 1 | 0 - 5.0 | 11 | 0 - 5 | 21 | 0 - 5.0 |
| 2 | 0 - 5.0 | 12 | 0 - 5 | 22 | 0 - 5.0 |
| 3 | 0 - 5.0 | 13 | 0 - 5 | 23 | 0 - 5.0 |
| 4 | 0 - 5.0 | 14 | 0 | 24 | 0 - 5.0 |
| 5 | 0 - 5.0 | 15 | 0 - 5.0 | 25 | 0 - 5.0 |
| 6 | 0 - 5.0 | 16 | 0 - 5.0 | 26 | 0 - 5.0 |
| 7 | 0 - 5.0 | 17 | 0 - 5.0 | 27 | 0 - 5.0 |
| 8 | 0 - 5.0 | 18 | 0 - 5.0 | 28 | 4.74 |
| 9 | 0 - 5.0 | 19 | 0 - 5.0 | | |
| 10 | 0 - 5.0 | 20 | 0 - 5.0 | | |




13 TP- DO3
V : 1V/div. H : 5µS/div.




12 SDAT, SCLK
V: 2V/div. H: 50µS/div.



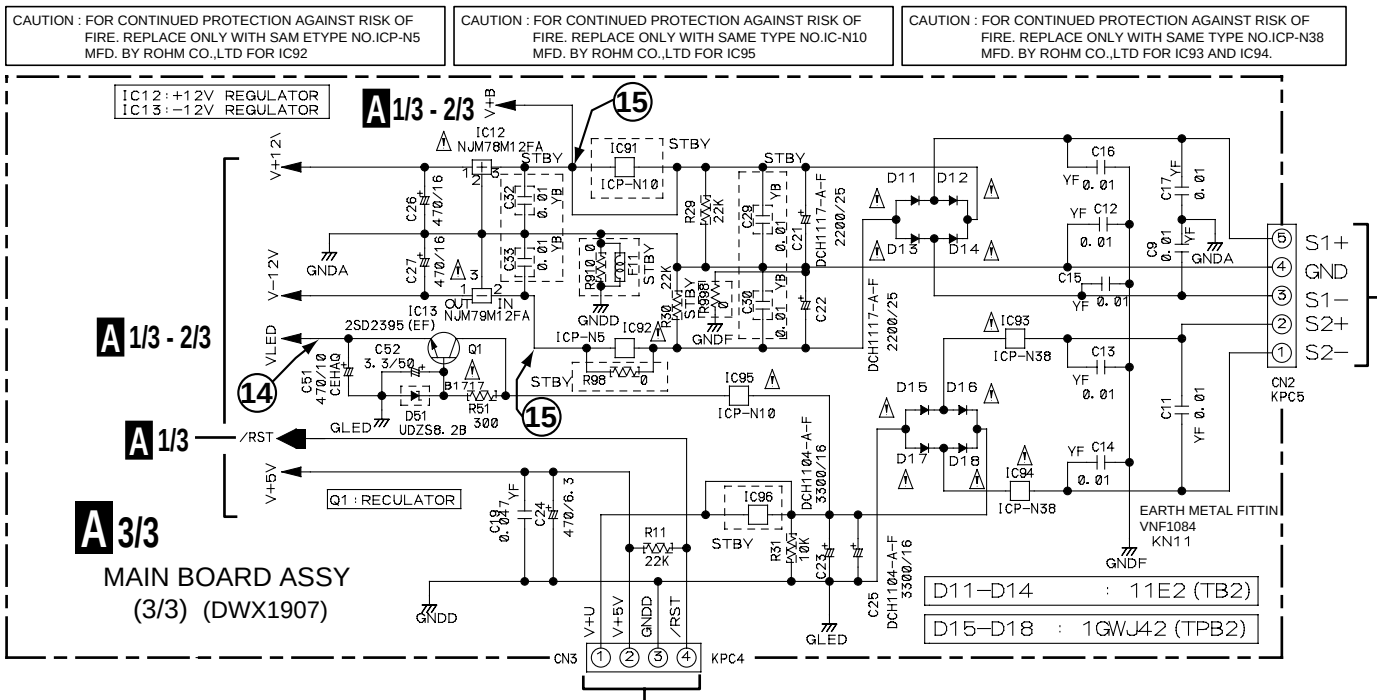

IC404 (MN19413A)

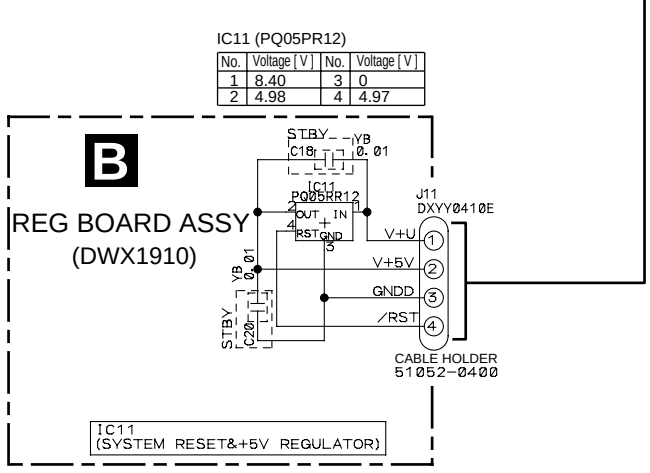
| No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.5 - 3.0 | 11 | 0 | 21 | 4.74 | 31 | 0 - 5.0 | 41 | 0 - 5.0 | 51 | 0 - 5.0 | 61 | 0 | 71 | 0 | 81 | 4.74 | 91 | 4.74 |
| 2 | 2.5 - 3.0 | 12 | 0 | 22 | 0 | 32 | 0 - 5.0 | 42 | 0 - 5.0 | 52 | 4.74 | 62 | 0 - 3.0 | 72 | 0 | 82 | 4.74 | 92 | 0 |
| 3 | 4.74 | 13 | 0 | 23 | 0 - 5.0 | 33 | 0 - 5.0 | 43 | 0 - 5.0 | 53 | 0 - 5.0 | 63 | 0 - 5.0 | 73 | 4.74 | 83 | 0 | 93 | 2.30 |
| 4 | 0 - 5.0 | 14 | 0 | 24 | 0 | 34 | 0 - 5.0 | 44 | 0 - 5.0 | 54 | 0 - 5.0 | 64 | 0 | 74 | 0 | 84 | 0 | 94 | 2.40 |
| 5 | 0 - 5.0 | 15 | 0 | 25 | 0 | 35 | 0 - 5.0 | 45 | 0 - 5.0 | 55 | 0 - 5.0 | 65 | 0 - 3.0 | 75 | 0 | 85 | 0.96 | 95 | 0 |
| 6 | 0 - 5.0 | 16 | 0 - 5.0 | 26 | 0 | 36 | 0 - 5.0 | 46 | 4.74 | 56 | 0 - 5.0 | 66 | 0 - 5.0 | 76 | 0 | 86 | 2.30 | 96 | 2.40 |
| 7 | 0 | 17 | 0 | 27 | 4.74 | 37 | 0 - 5.0 | 47 | 4.74 | 57 | 0 - 5.0 | 67 | 0 | 77 | 0 | 87 | 0 | 97 | 0 |
| 8 | 0 - 5.0 | 18 | 0 | 28 | 0 | 38 | 0 - 5.0 | 48 | 0 - 5.0 | 58 | 0 - 5.0 | 68 | 4.74 | 78 | 4.74 | 88 | 0.96 | 98 | 4.74 |
| 9 | 0 - 5.0 | 19 | 4.74 | 29 | 0 | 39 | 0 - 5.0 | 49 | 0 - 5.0 | 59 | 0 - 5.0 | 69 | 0 | 79 | 0 | 89 | 2.40 | 99 | 2.5 - 3.0 |
| 10 | 0 - 5.0 | 20 | 4.74 | 30 | 0 - 5.0 | 40 | 0 | 50 | 4.74 | 60 | 0 - 5.0 | 70 | 4.74 | 80 | 0 | 90 | 0 | 100 | 2.5 - 3.0 |

A 1/3

A 2/3

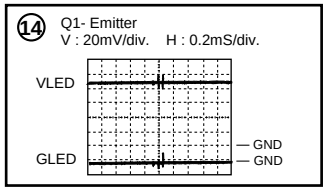
# 3.4 MAIN (3/3), REG, TRANS and POWER BOARD ASSY

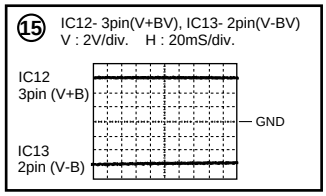

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAM ETYPE NO.ICP-N5 MFD. BY ROHM CO.,LTD FOR IC92
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO.IC-N10 MFD. BY ROHM CO.,LTD FOR IC95
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO.ICP-N38 MFD. BY ROHM CO.,LTD FOR IC93 AND IC94.
IC12 : +12V REGULATOR
IC13 : −12V REGULATOR
A 1/3 - 2/3
A 1/3
A 3/3
MAIN BOARD ASSY
(3/3) (DWX1907)
Q1 : RECULATOR
D11−D14 : 11E2 (TB2)
D15−D18 : 1GWJ42 (TPB2)
EARTH METAL FITTIN
VNF1084
KN11
CN2
KPC5
CN3
KPC4
S1+
GND
S1−
S2+
S2−

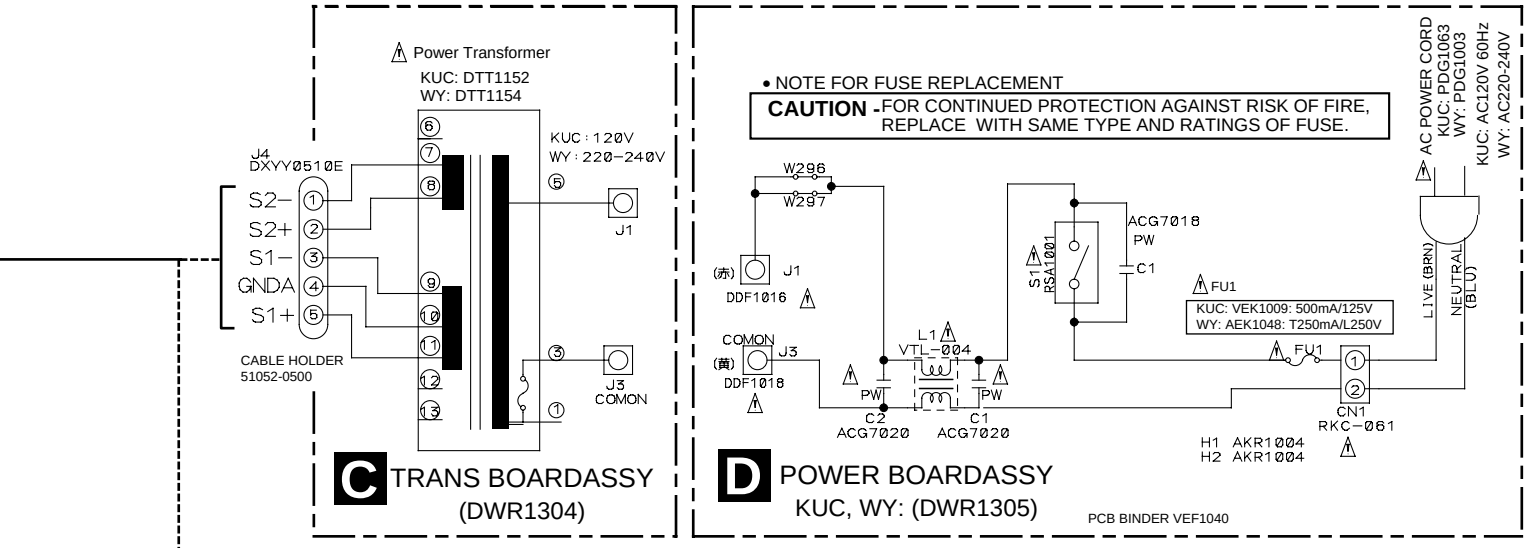


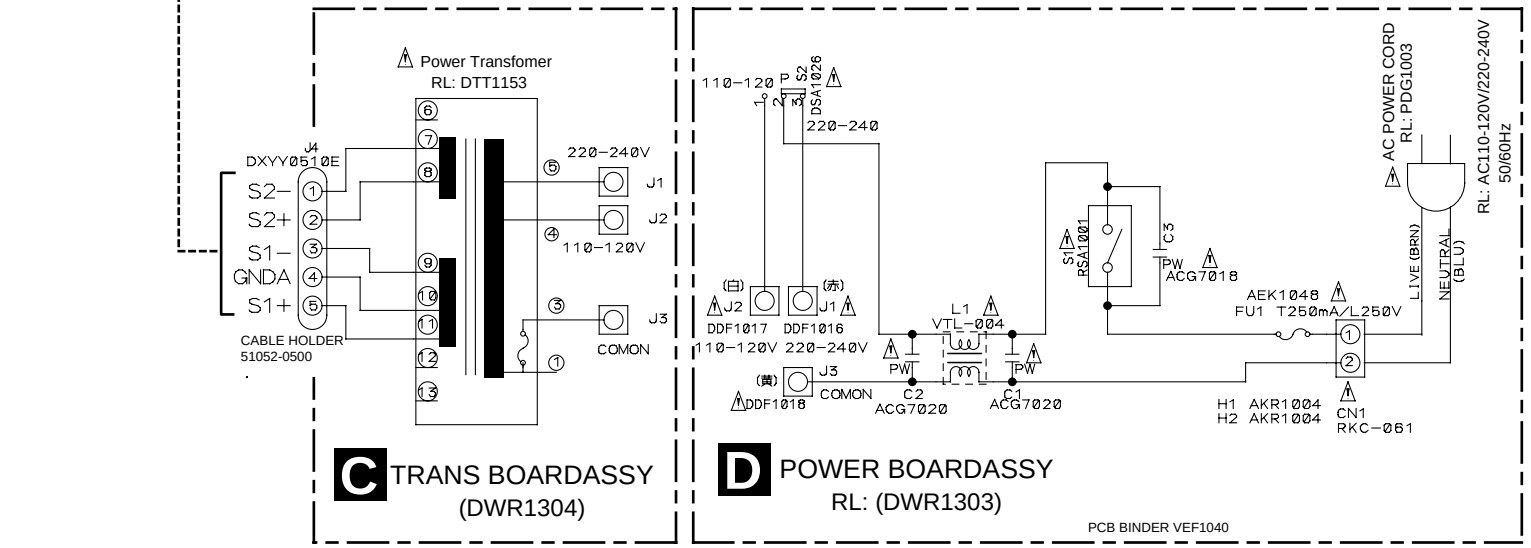

IC11 (PQ05PR12)

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 8.40 | 3 | 0 |
| 2 | 4.98 | 4 | 4.97 |



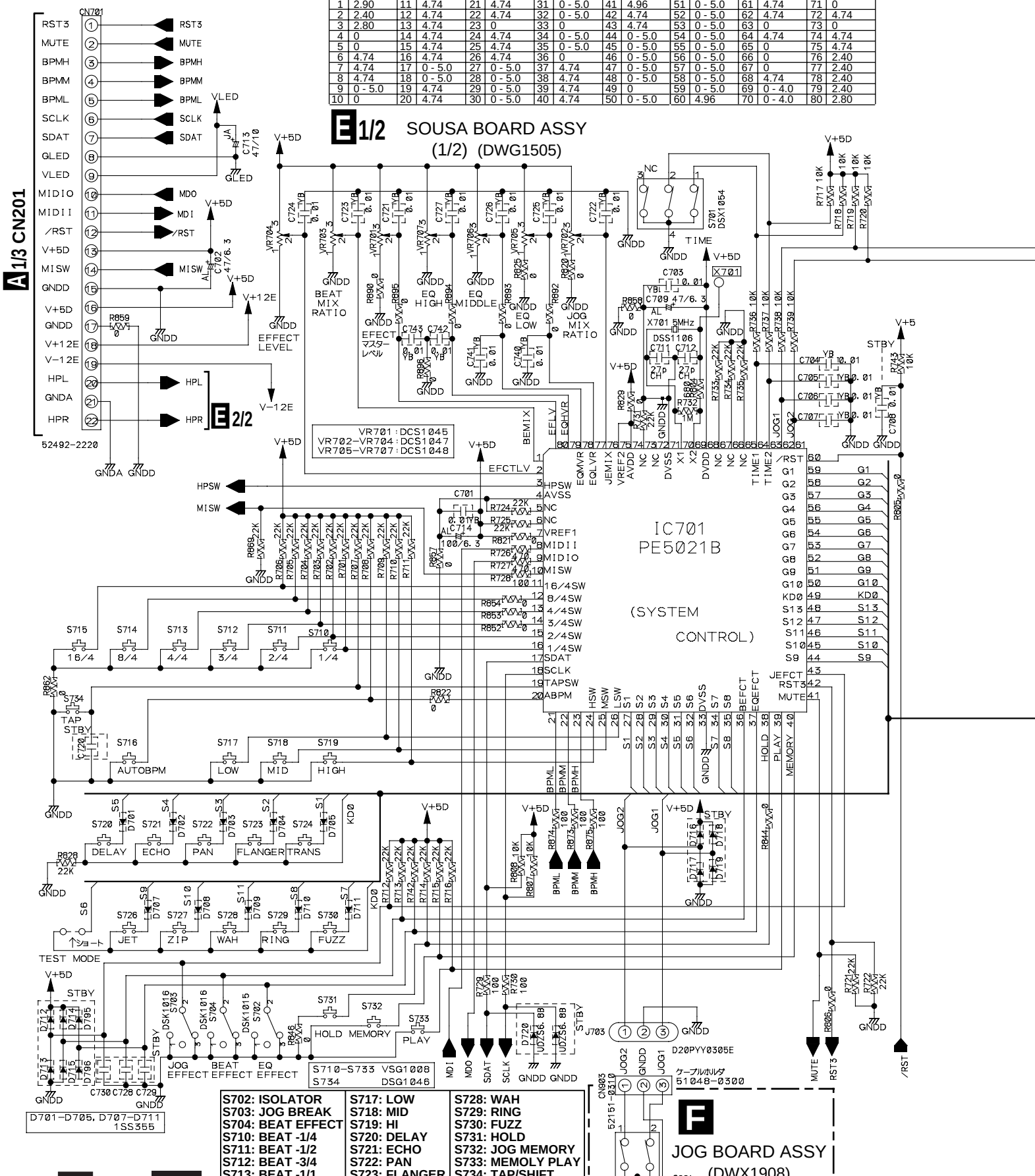

Power Transformer
KUC: DTT1152
WY: DTT1154
KUC : 120V
WY : 220–240V
J4
DXYY0510E
S2–
S2+
S1–
GNDA
S1+
CABLE HOLDER
51052-0500
J1
J3
COMON
C TRANS BOARDASSY
(DWR1304)
• NOTE FOR FUSE REPLACEMENT
CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE AND RATINGS OF FUSE.
W296
W297
DDF1016
ACG7018
PW
C1
S1
RSA1001
FU1
KUC: VEK1009: 500mA/125V
WY: AEK1048: T250mA/L250V
COMON
DDF1018
L1
VTL–004
C2
ACG7020
C1
ACG7020
H1 AKR1004
H2 AKR1004
CN1
RKC–061
AC POWER CORD
KUC: PDG1063
WY: PDG1003
KUC: AC120V 60Hz
WY: AC220-240V
LIVE (BRN)
NEUTRAL (BLU)
D POWER BOARDASSY
KUC, WY: (DWR1305)
PCB BINDER VEF1040


Power Transfomer
RL: DTT1153
J4
DXYY0510E
S2–
S2+
S1–
GNDA
S1+
CABLE HOLDER
51052-0500
220–240V
110–120V
J1
J2
J3
COMON
C TRANS BOARDASSY
(DWR1304)
110–120
220–240
DSA1026
DDF1017
DDF1016
110–120V 220–240V
DDF1018
L1
VTL–004
C2
ACG7020
C1
ACG7020
S1
RSA1001
C3
ACG7018
AEK1048
FU1 T250mA/L250V
H1 AKR1004
H2 AKR1004
CN1
RKC–061
AC POWER CORD
RL: PDG1003
RL: AC110-120V/220-240V
50/60Hz
LIVE (BRN)
NEUTRAL (BLU)
D POWER BOARDASSY
RL: (DWR1303)
PCB BINDER VEF1040

# 3.5 SOUSA (1/2) BOARD ASSY

IC701 (PE5021A)

| No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.90 | 11 | 4.74 | 21 | 4.74 | 31 | 0 - 5.0 | 41 | 4.96 | 51 | 0 - 5.0 | 61 | 4.74 | 71 | 0 |
| 2 | 2.40 | 12 | 4.74 | 22 | 4.74 | 32 | 0 - 5.0 | 42 | 4.74 | 52 | 0 - 5.0 | 62 | 4.74 | 72 | 4.74 |
| 3 | 2.80 | 13 | 4.74 | 23 | 0 | 33 | 0 | 43 | 4.74 | 53 | 0 - 5.0 | 63 | 0 | 73 | 0 |
| 4 | 0 | 14 | 4.74 | 24 | 4.74 | 34 | 0 - 5.0 | 44 | 0 - 5.0 | 54 | 0 - 5.0 | 64 | 4.74 | 74 | 4.74 |
| 5 | 0 | 15 | 4.74 | 25 | 4.74 | 35 | 0 - 5.0 | 45 | 0 - 5.0 | 55 | 0 - 5.0 | 65 | 0 | 75 | 4.74 |
| 6 | 4.74 | 16 | 4.74 | 26 | 4.74 | 36 | 0 | 46 | 0 - 5.0 | 56 | 0 - 5.0 | 66 | 0 | 76 | 2.40 |
| 7 | 4.74 | 17 | 0 - 5.0 | 27 | 0 - 5.0 | 37 | 4.74 | 47 | 0 - 5.0 | 57 | 0 - 5.0 | 67 | 0 | 77 | 2.40 |
| 8 | 4.74 | 18 | 0 - 5.0 | 28 | 0 - 5.0 | 38 | 4.74 | 48 | 0 - 5.0 | 58 | 0 - 5.0 | 68 | 4.74 | 78 | 2.40 |
| 9 | 0 - 5.0 | 19 | 4.74 | 29 | 0 - 5.0 | 39 | 4.74 | 49 | 0 | 59 | 0 - 5.0 | 69 | 0 - 4.0 | 79 | 2.40 |
| 10 | 0 | 20 | 4.74 | 30 | 0 - 5.0 | 40 | 4.74 | 50 | 0 - 5.0 | 60 | 4.96 | 70 | 0 - 4.0 | 80 | 2.80 |




| | | |
|---|---|---|
| S702: ISOLATOR | S717: LOW | S728: WAH |
| S703: JOG BREAK | S718: MID | S729: RING |
| S704: BEAT EFFECT | S719: HI | S730: FUZZ |
| S710: BEAT -1/4 | S720: DELAY | S731: HOLD |
| S711: BEAT -1/2 | S721: ECHO | S732: JOG MEMORY |
| S712: BEAT -3/4 | S722: PAN | S733: MEMOLY PLAY |
| S713: BEAT -1/1 | S723: FLANGER | S734: TAP/SHIFT |
| S714: BEAT -2/1 | S724: TRANS | |
| S715: BEAT -4/1 | S726: JET | |
| S716: BPM MODE | S727: ZIP | |

IC702 (LB1740)

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 0 - 5.0 | 10 | 0 |
| 2 | 0 - 5.0 | 11 | 0 - 3.0 |
| 3 | 0 - 5.0 | 12 | 0 - 3.0 |
| 4 | 0 - 5.0 | 13 | 0 - 3.0 |
| 5 | 0 - 5.0 | 14 | 0 - 3.0 |
| 6 | 0 - 5.0 | 15 | 0 - 3.0 |
| 7 | 0 - 5.0 | 16 | 0 - 3.0 |
| 8 | 0 - 5.0 | 17 | 0 - 3.0 |
| 9 | 2.8 | 18 | 0 - 3.0 |

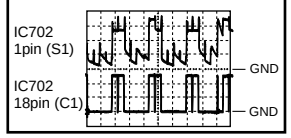
IC704 (TC74HC174AF)

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 4.79 | 9 | 0 - 5.0 |
| 2 | 0 - 5.0 | 10 | 4.75 |
| 3 | 0 - 5.0 | 11 | 0 - 5.0 |
| 4 | 0 - 5.0 | 12 | 4.75 |
| 5 | 4.75 | 13 | 0 - 5.0 |
| 6 | 0 | 14 | 0 - 5.0 |
| 7 | 0 | 15 | 4.75 |
| 8 | 0 | 16 | 4.79 |

IC705 (TC74HC174AF)

| No. | Voltage [V] | No. | Voltage [V] |
|---|---|---|---|
| 1 | 4.79 | 9 | 0 - 5.0 |
| 2 | 0 - 5.0 | 10 | 4.74 |
| 3 | 0 - 5.0 | 11 | 0 - 5.0 |
| 4 | 0 - 5.0 | 12 | 4.74 |
| 5 | 4.74 | 13 | 0 - 5.0 |
| 6 | 0 - 5.0 | 14 | 0 - 5.0 |
| 7 | 4.74 | 15 | 4.74 |
| 8 | 0 | 16 | 4.78 |

16 IC702- 1pin(S1), 18pin(C1)
V : 2V/div. H : 2mS/div.

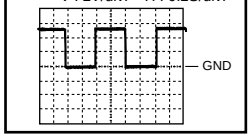



Q717~Q727 : 2SC2412K (RS)
(Q717 - Q727 : LED DRIVER)

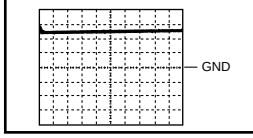
Q707~Q716
2SD2114K (VW)

Q701 -Q716 : LED DRIVER

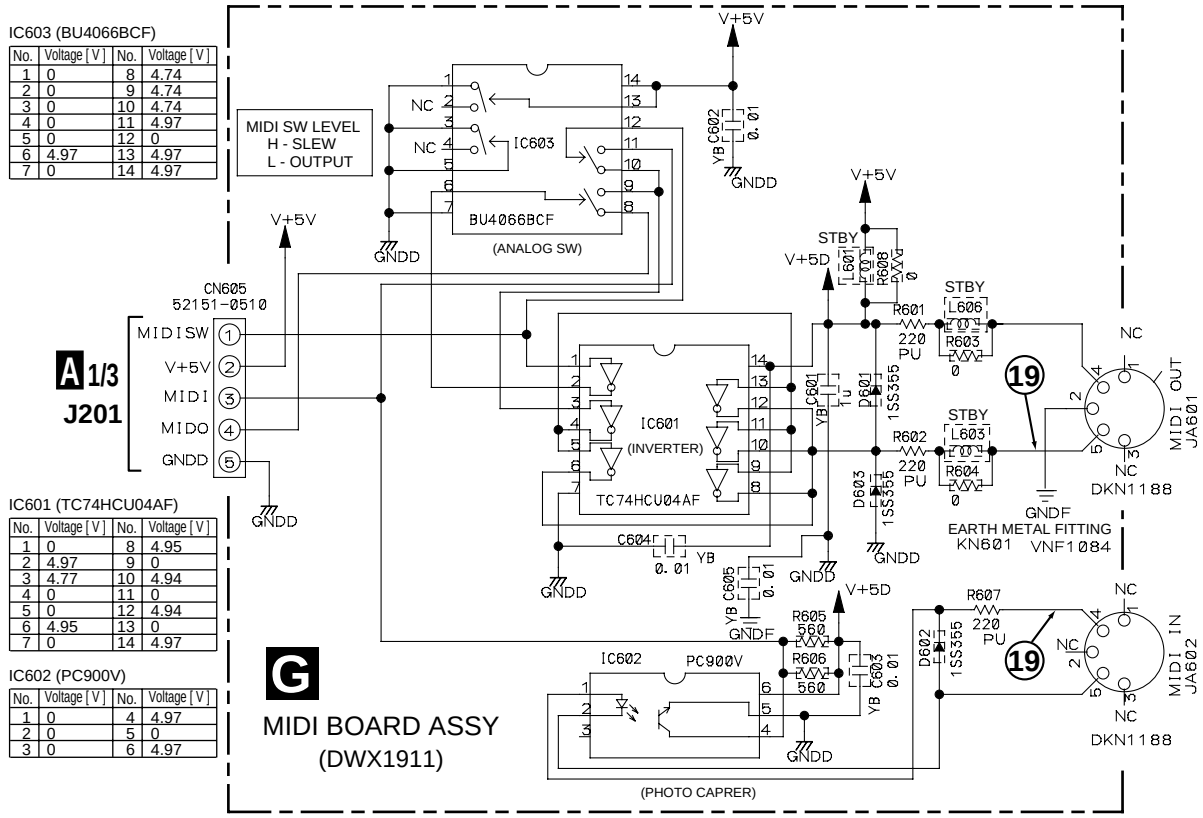
17 IC705- 2pin
V : 2V/div. H : 0.2S/div.




18 IC705- 2pin
V : 2V/div. H : 0.2S/div.



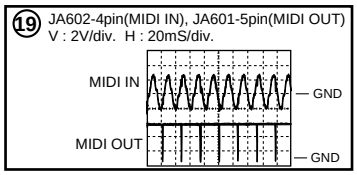
## 2.5 SOUSA (2/2), MIDI, 7SEG and HP. BOARD ASSY

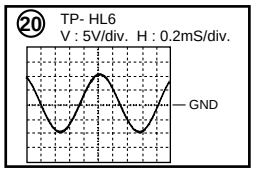



| IC603 (BU4066BCF) | | | |
|---|---|---|---|
| No. | Voltage [V] | No. | Voltage [V] |
| 1 | 0 | 8 | 4.74 |
| 2 | 0 | 9 | 4.74 |
| 3 | 0 | 10 | 4.74 |
| 4 | 0 | 11 | 4.97 |
| 5 | 0 | 12 | 0 |
| 6 | 4.97 | 13 | 4.97 |
| 7 | 0 | 14 | 4.97 |

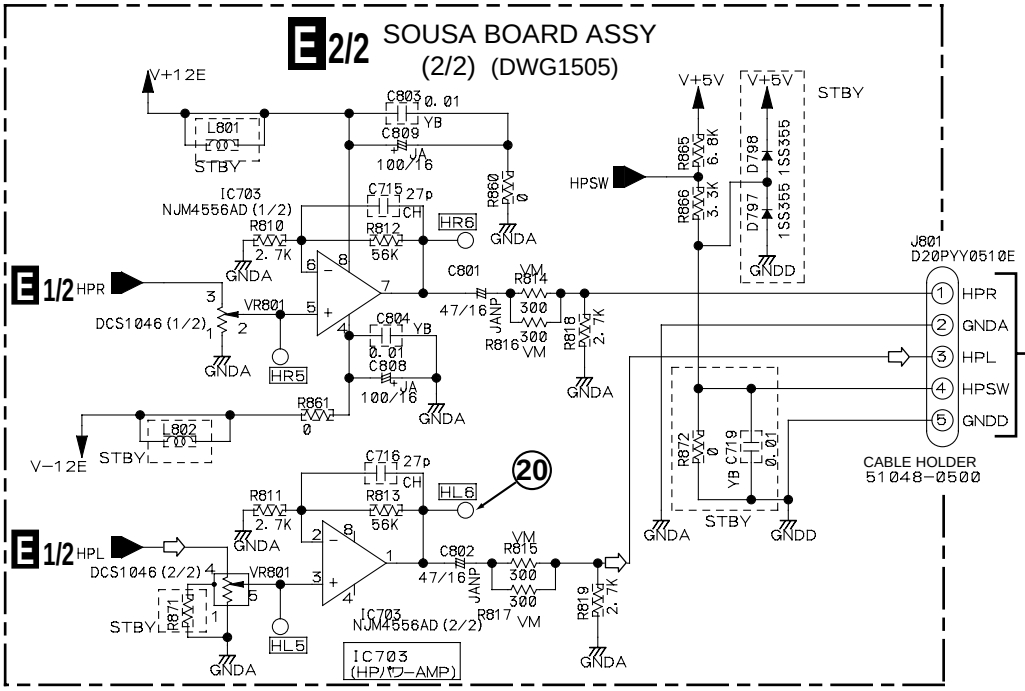
| IC601 (TC74HCU04AF) | | | |
|---|---|---|---|
| No. | Voltage [V] | No. | Voltage [V] |
| 1 | 0 | 8 | 4.95 |
| 2 | 4.97 | 9 | 0 |
| 3 | 4.77 | 10 | 4.94 |
| 4 | 0 | 11 | 0 |
| 5 | 0 | 12 | 4.94 |
| 6 | 4.95 | 13 | 0 |
| 7 | 0 | 14 | 4.97 |

| IC602 (PC900V) | | | |
|---|---|---|---|
| No. | Voltage [V] | No. | Voltage [V] |
| 1 | 0 | 4 | 4.97 |
| 2 | 0 | 5 | 0 |
| 3 | 0 | 6 | 4.97 |

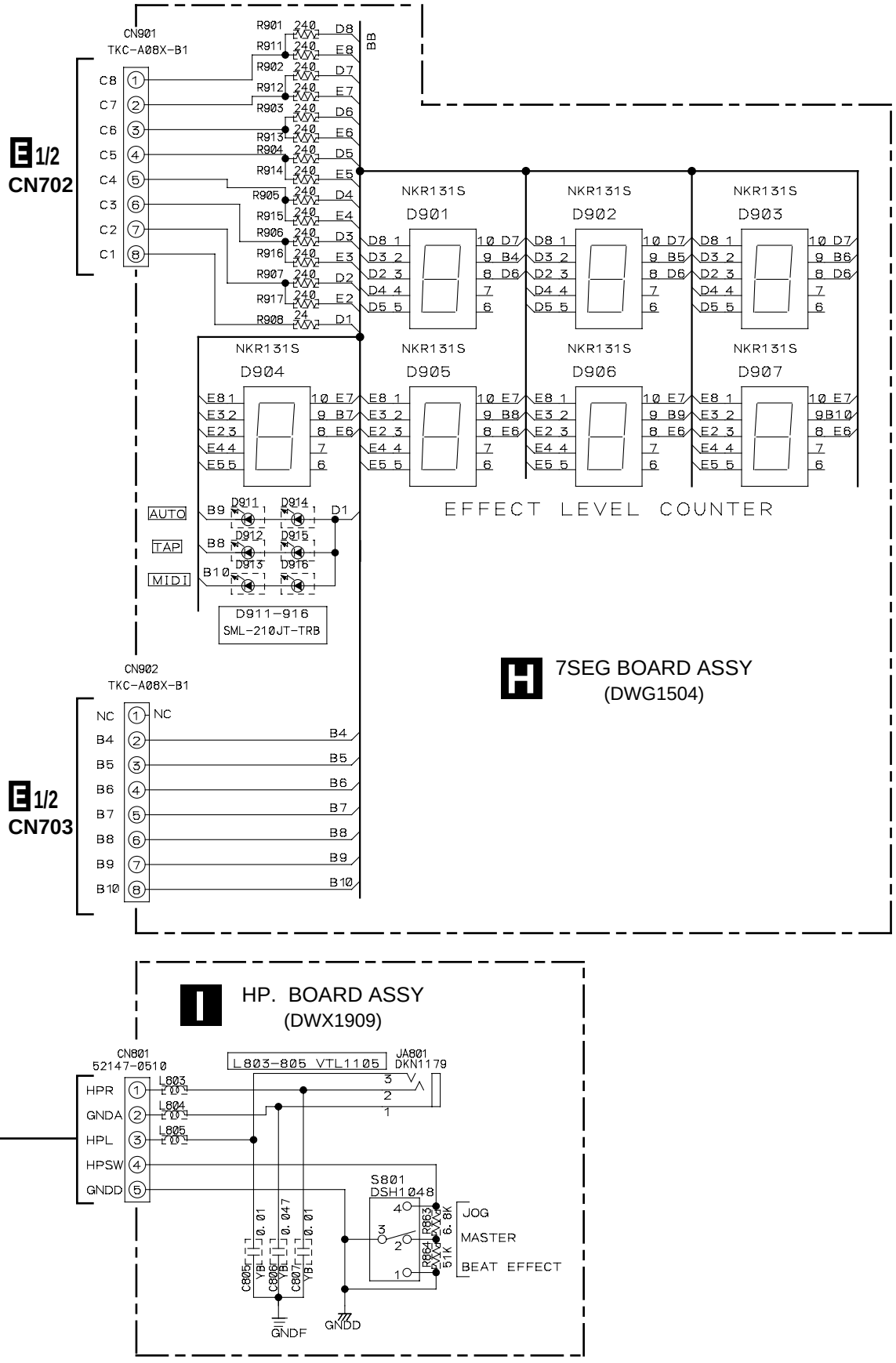


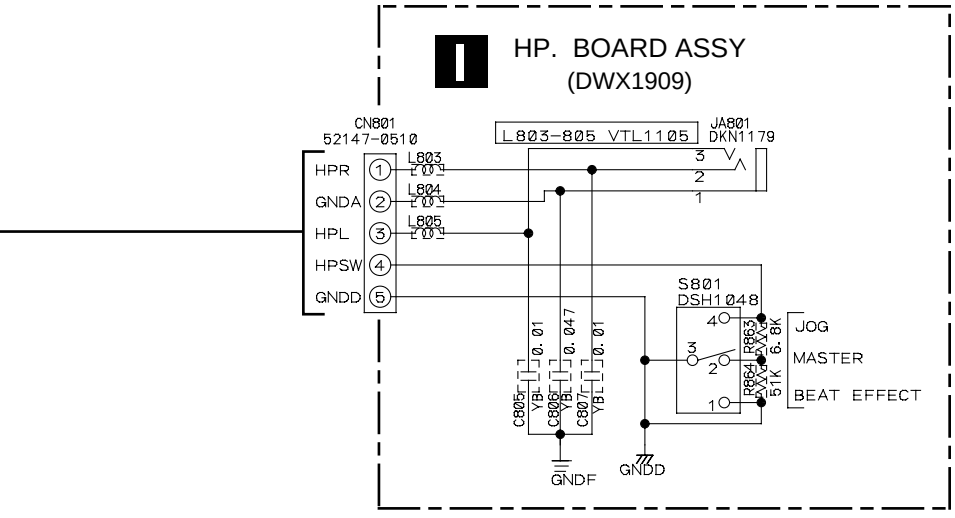




SIGNAL ROUTE
⇨: AUDIO SIGNAL (HEADPHONE)




| IC703 (NJM4556AD) | | | |
|---|---|---|---|
| No. | Voltage [V] | No. | Voltage [V] |
| 1 | -4.5 - 4.5 | 5 | -0.2 - 0.2 |
| 2 | -0.2 - 0.2 | 6 | -0.2 - 0.2 |
| 3 | -0.2 - 0.2 | 7 | -4.5 - 4.5 |
| 4 | -11.8 | 8 | 11.9 |


E 1/2
CN702
CN901
TKC-A08X-B1
C8 C7 C6 C5 C4 C3 C2 C1
R901 240 D8
R911 240 E8
R902 240 D7
R912 240 E7
R903 240 D6
R913 240 E6
R904 240 D5
R914 240 E5
R905 240 D4
R915 240 E4
R906 240 D3
R916 240 E3
R907 240 D2
R917 240 E2
R908 240 D1
BB
NKR131S D901
NKR131S D902
NKR131S D903
NKR131S D904
NKR131S D905
NKR131S D906
NKR131S D907
AUTO
TAP
MIDI
B9 B8 B10
D911 D914
D912 D915
D913 D916
D1
D911–916
SML-210JT-TRB
EFFECT LEVEL COUNTER
H 7SEG BOARD ASSY
(DWG1504)
CN902
TKC-A08X-B1
NC B4 B5 B6 B7 B8 B9 B10
E 1/2
CN703


I HP. BOARD ASSY
(DWX1909)
CN801
52147-0510
HPR GNDA HPL HPSW GNDD
L803 L804 L805
L803–805 VTL1105
JA801
DKN1179
S801
DSH1048
JOG
MASTER
BEAT EFFECT
R863 6.8K
R864 5.1K
C805 0.01
C806 0.047
C807 0.01
YBL
GNDF
GNDD

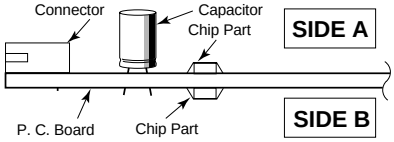
# 4. PCB CONNECTION DIAGRAM

**NOTE FOR PCB DIAGRAMS:**

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

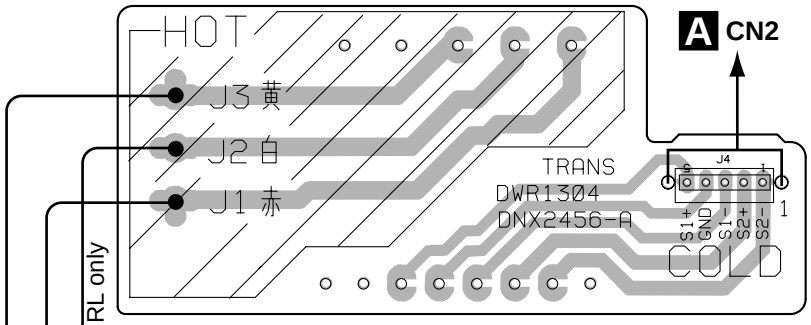
| Symbol in PCB Diagrams | Symbol in Schematic Diagrams | Part Name |
|---|---|---|
| B C E | B C E B C E | Transistor |
| B C E | B C E B C E | Transistor with resistor |
| D G S | D G S D G S | Field effect transistor |
| | | Resistor array |
| | | 3-terminal regulator |

3. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. Viewpoint of PCB diagrams



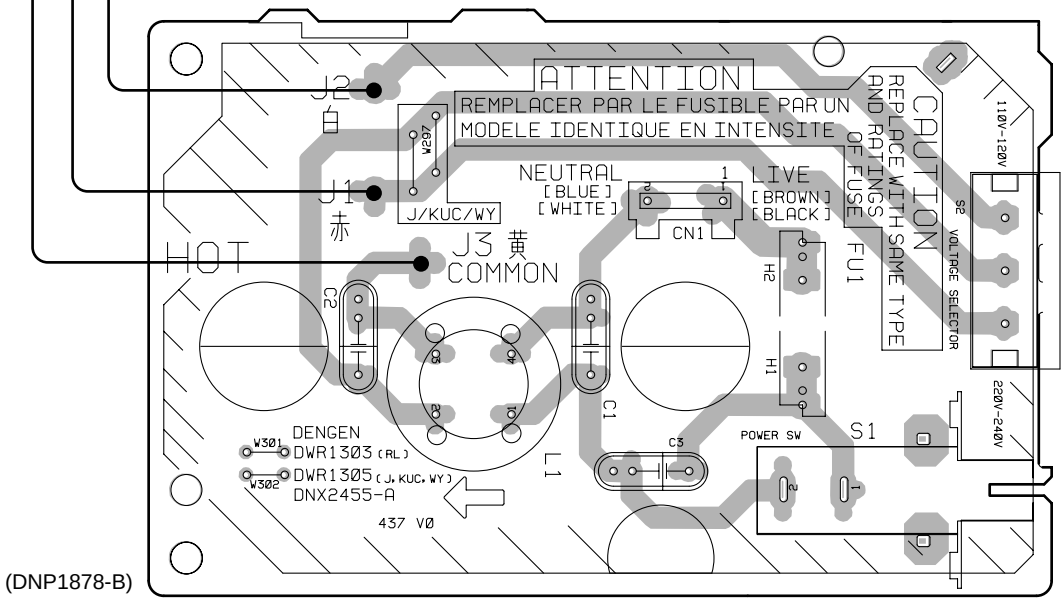

## 4.1 TRANS and POWER BOARD ASSY

### C TRANS BOARD ASSY




SIDE A

### D POWER BOARD ASSY



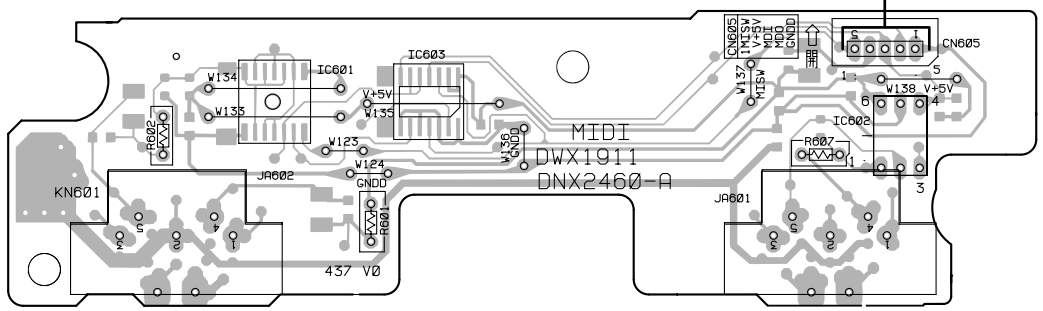

(DNP1878-B)

## 4.2 MIDI and 7SEG BOARD ASSY

### G MIDI BOARD ASSY

A J201

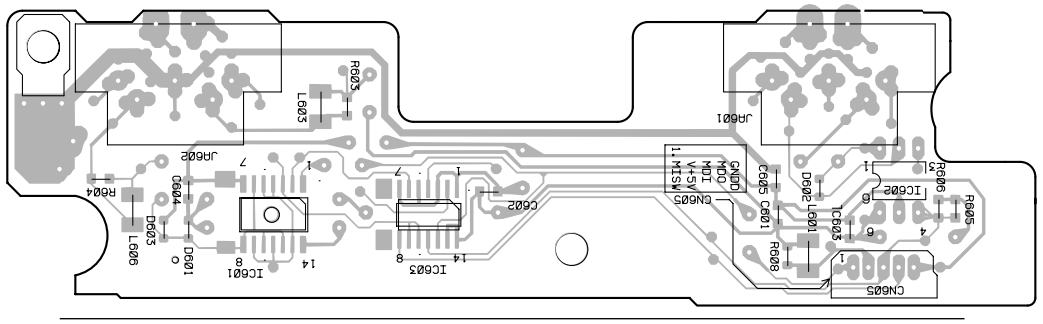
SIDE A




(DNP1878-B)

### G MIDI BOARD ASSY

SIDE B



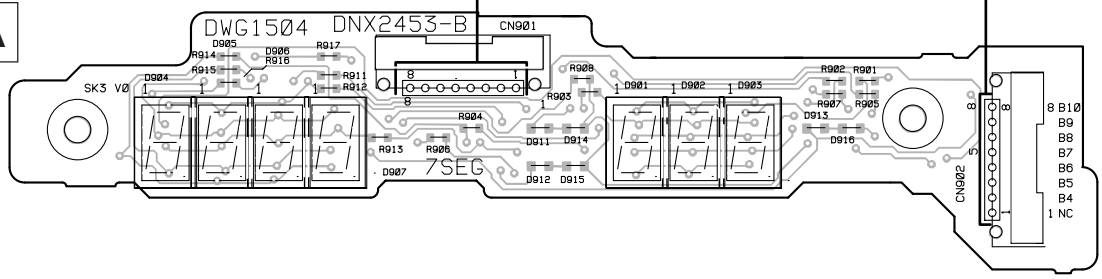

(DNP1878-B)

### H 7SEG BOARD ASSY

E CN702

E CN703

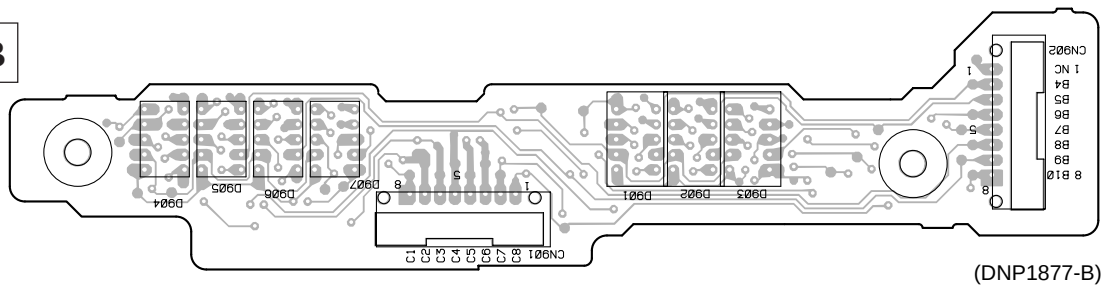
SIDE A




(DNP1877-B)

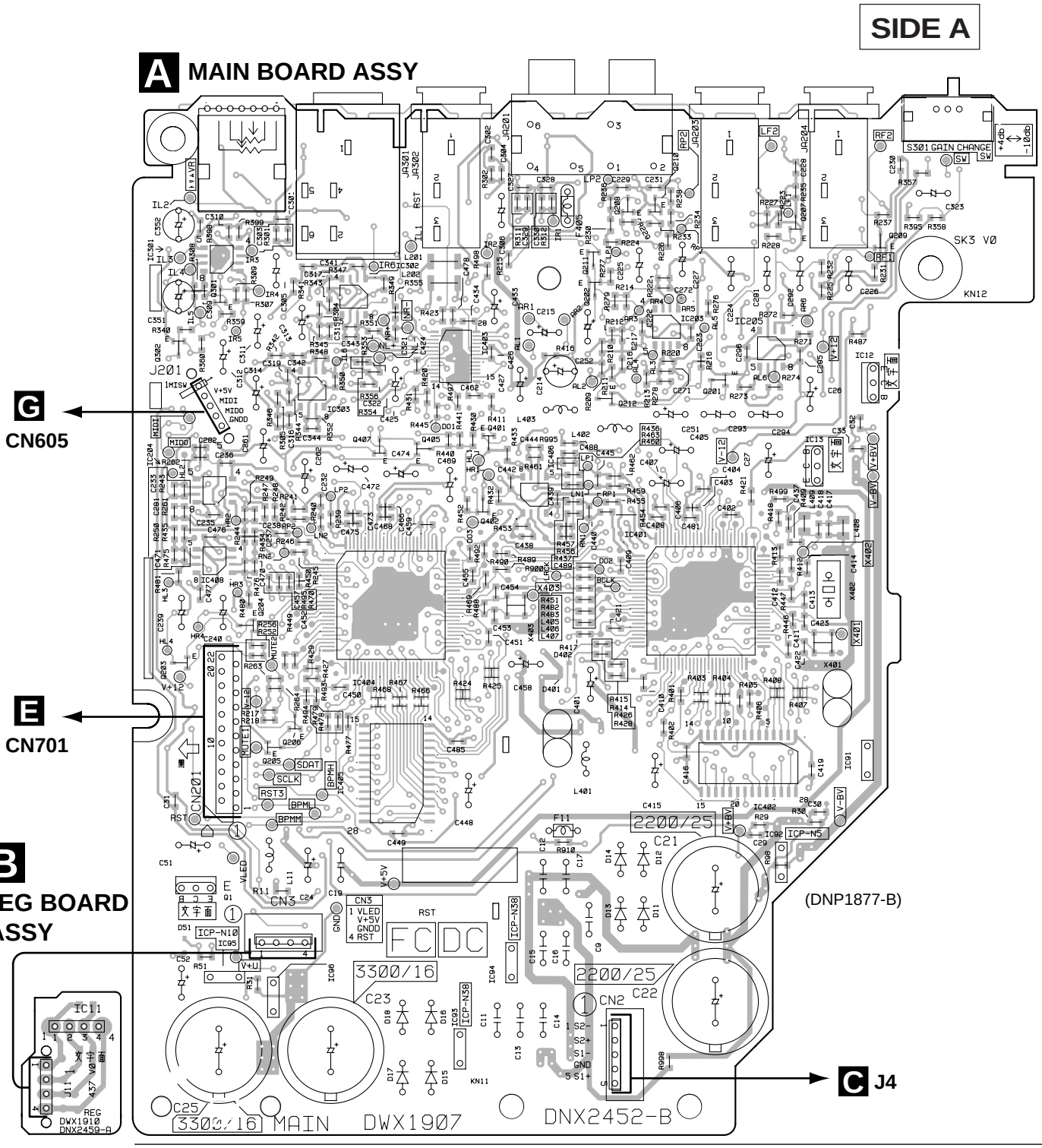
### H 7SEG BOARD ASSY

SIDE B



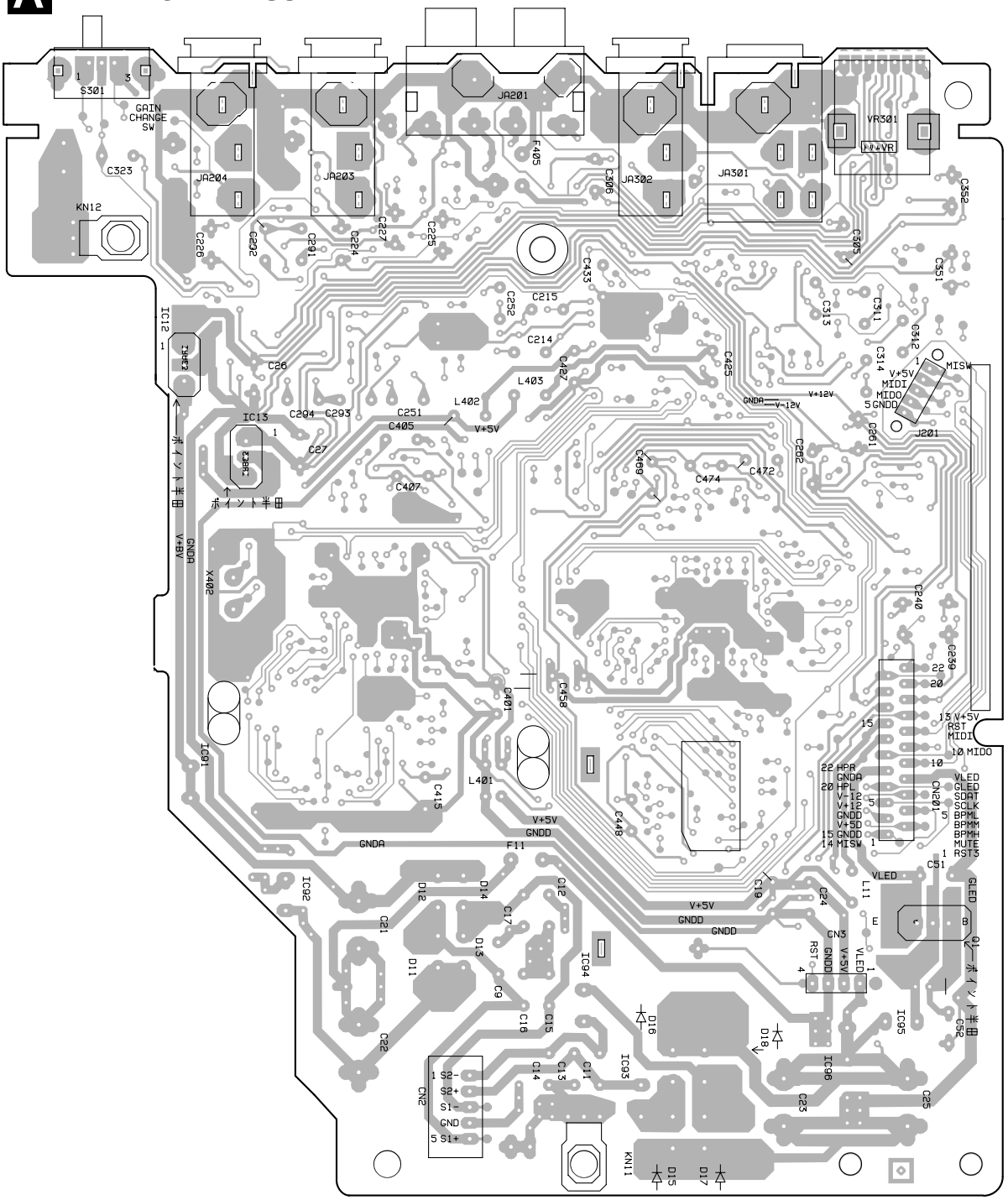

(DNP1877-B)

## 4.3 MAIN and REG BOARD ASSY



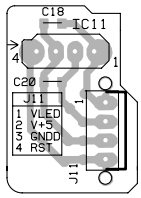
SIDE B

## A MAIN BOARD ASSY




(DNP1877-B)

## B REG BOARD ASSY

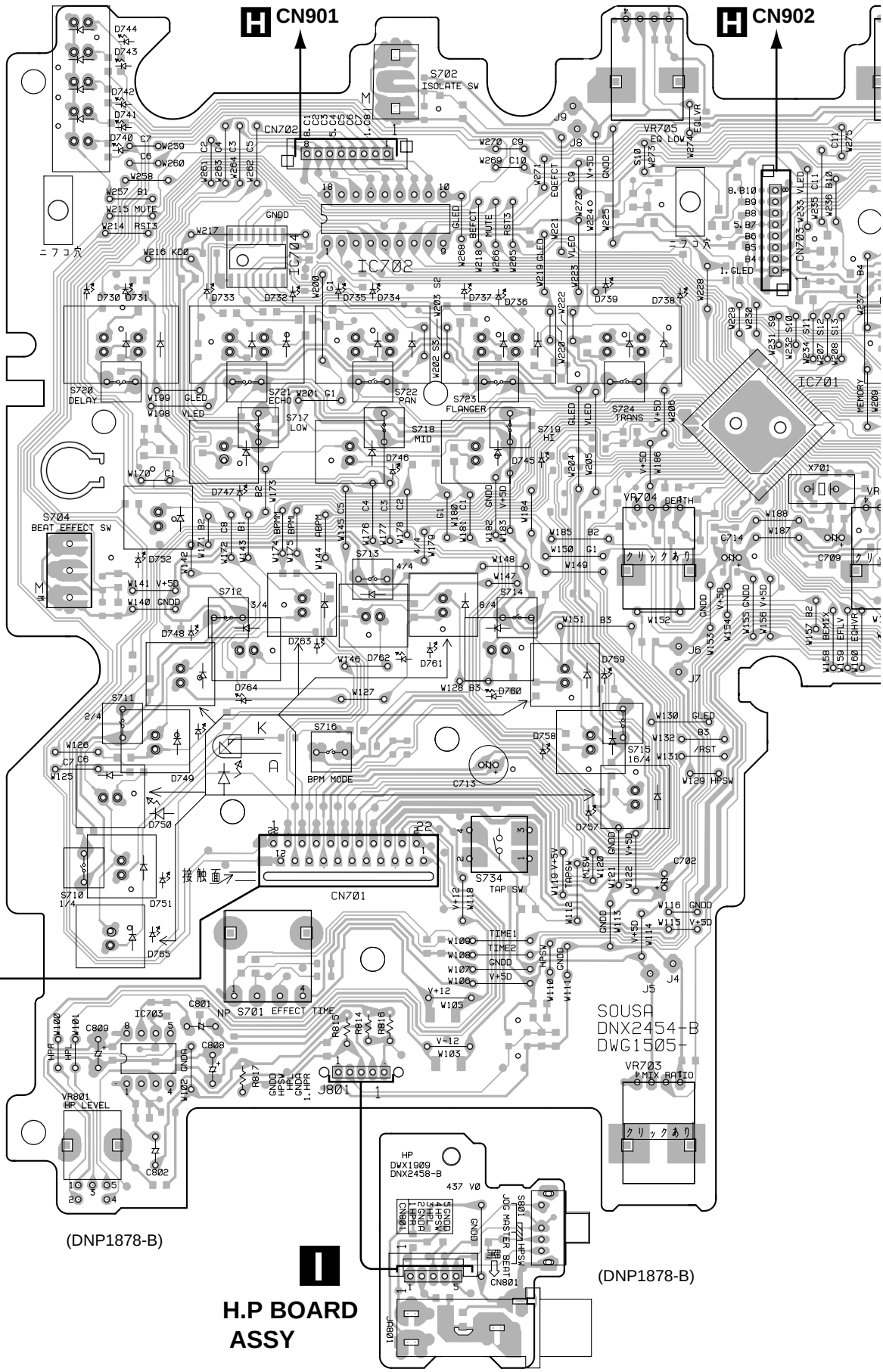


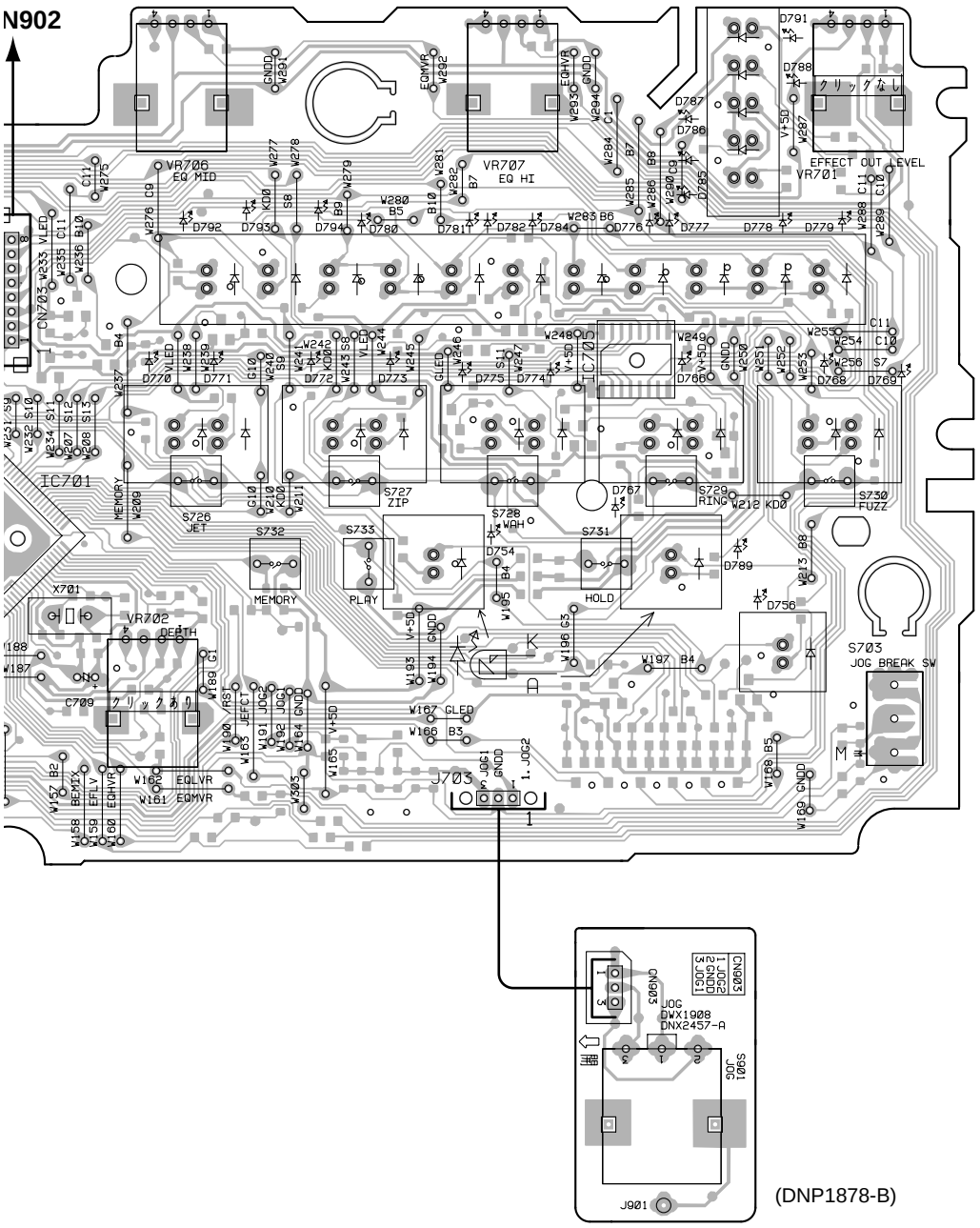

(DNP1878-B)

## 4.4 SOUSA, 7SEG and H.P BOARD ASSY

### E SOUSA BOARD ASSY

SIDE A

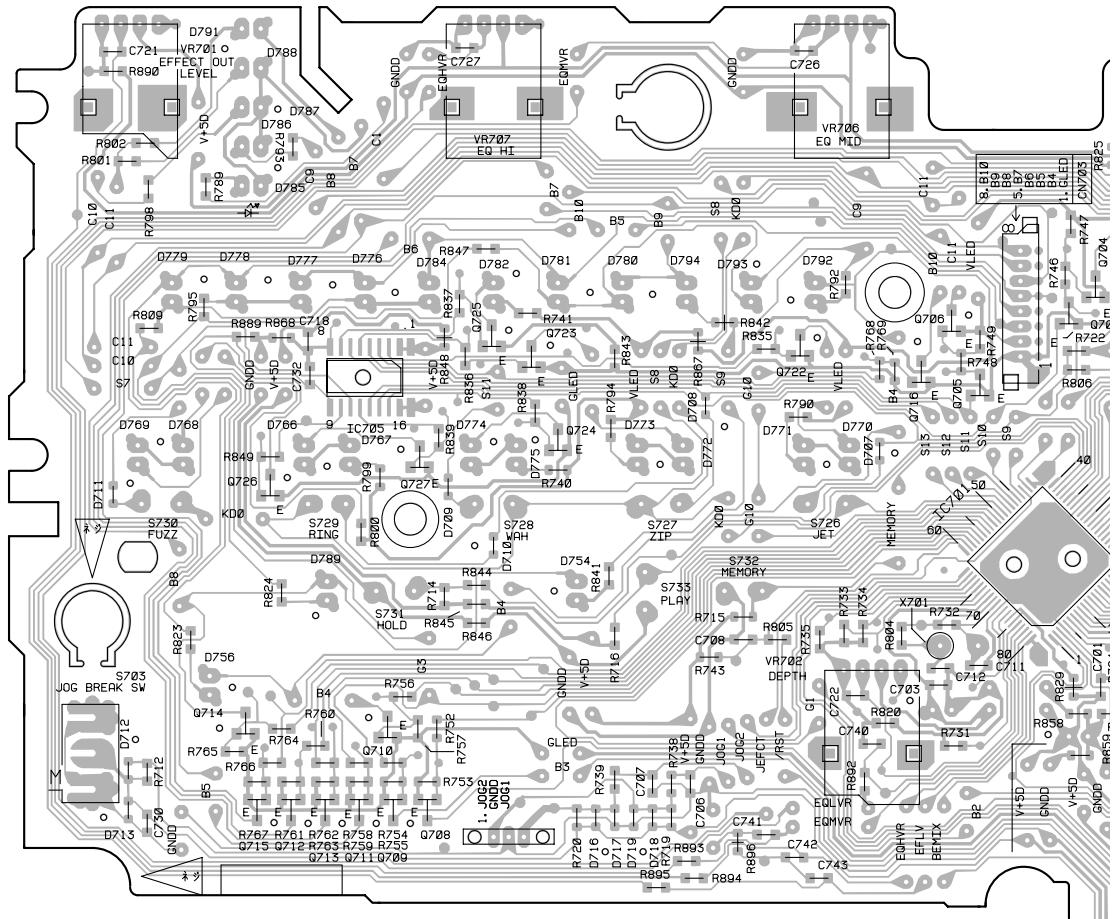


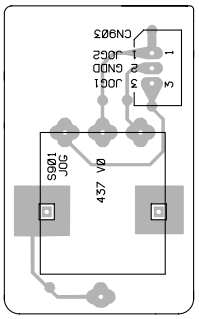



## F JOG BOARD ASSY

## E SOUSA BOARD ASSY

SIDE B

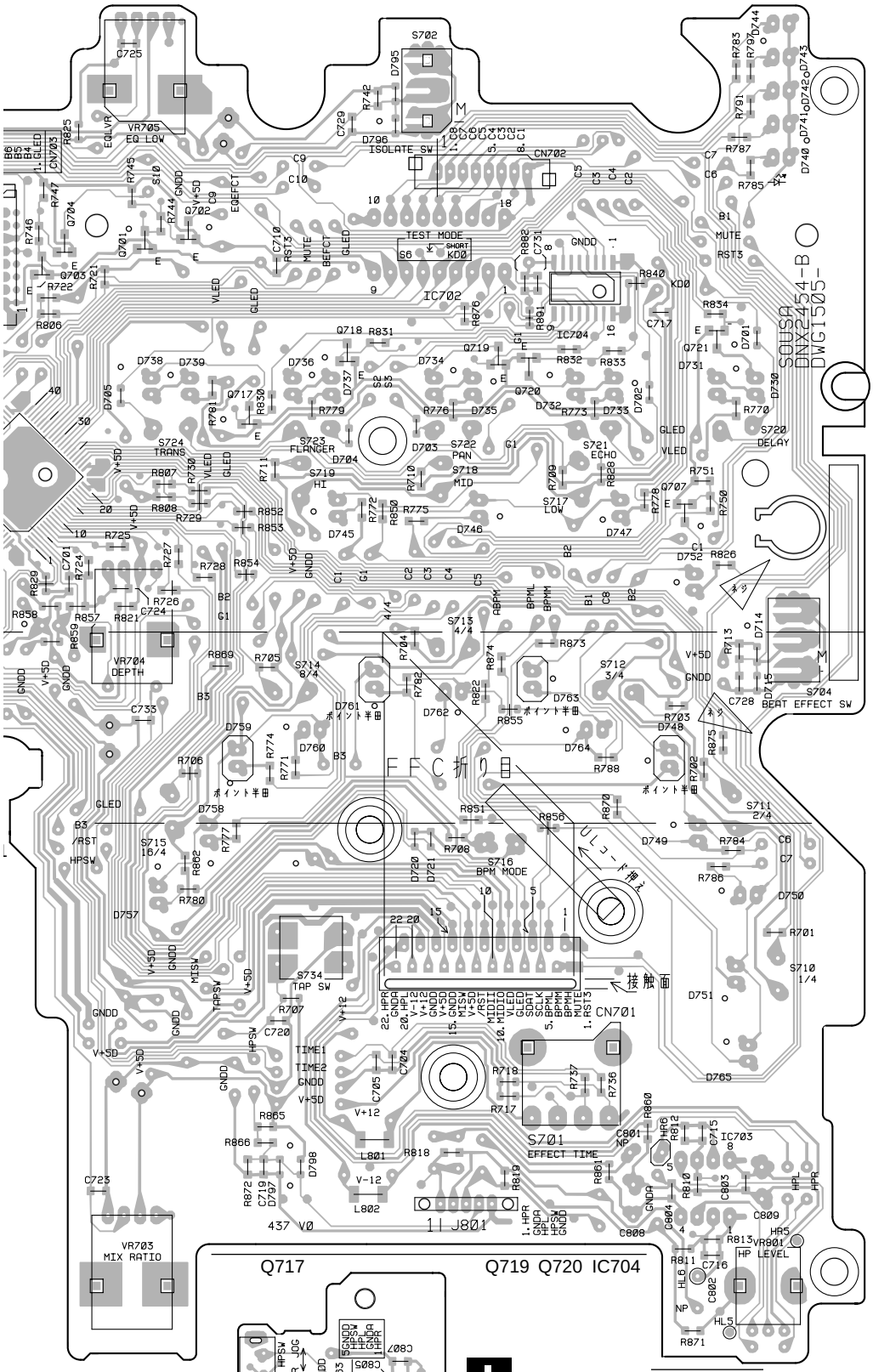


(DNP1878-B)

## F JOG BOARD ASSY

SIDE B


SOUSA-B
DNX2454-B
DWG1505-
IC702
IC704
CN702
CN701
S702
S701
EFFECT TIME
S704
BEAT EFFECT SW
S720
DELAY
S721
ECHO
S722
PAN
S723
FLANGER
S724
TRANS
S719
HI
S718
MID
S717
LOW
S716
BPM MODE
S715
16/4
S714
8/4
S713
4/4
S712
3/4
S711
2/4
S710
1/4
S734
TAP SW
VR705
EG LOW
VR704
DEPTH
VR703
MIX RATIO
VR801
HP LEVEL
TEST MODE
SHORT
KD0
MUTE
RST3
EQFFCT
BEFCT
GLED
VLED
GNDD
V+5D
V-12
V+12
HPSW
TAPSW
MISW
BPMM
BPML
TIME1
TIME2
437 V0
J801
CN801
S801
BEAT MASTER
JOG
Q717
Q719 Q720 IC704
Q707 Q721
(DNP1878-B)
H.P BOARD
ASSY
(DNP1878-B)

# 5. PCB PARTS LIST

*NOTES :*
- *Parts marked by " NSP " are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

*Ex. 1* *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

*560 Ω → 56 × 10¹ → 561 ..... RD1/4PU 5 6 1 J*
*47k Ω → 47 × 10³ → 473 ..... RD1/4PU 4 7 3 J*
*0.5 Ω → R50 ..... RN2H R 5 0 K*
*1 Ω → 1R0 ..... RS1P 1 R 0 K*

*Ex. 2* *When there are 3 effective digits (such as in high precision metal film resistors).*

*5.62k Ω → 562 × 10¹ → 5621 ..... RN1/4PC 5 6 2 1 F*

## ■ LIST OF WHOLE PCB ASSEMBLIES

| Mark | Symbol and Description | Part No. | | | Remarks |
|---|---|---|---|---|---|
| | | KUC type | WY type | RL type | |
| NSP | MOTHER BOARD ASSY | DWM2083 | DWM2083 | DWM2083 | |
| | ├ MAIN BOARD ASSY | DWX1907 | DWX1907 | DWX1907 | |
| | └ 7SEG BOARD ASSY | DWG1504 | DWG1504 | DWG1504 | |
| NSP | SUB BOARD ASSY | DWX1900 | DWX1900 | DWX1901 | |
| | ├ SOUSA BOARD ASSY | DWG1505 | DWG1505 | DWG1505 | |
| NSP | ├ TRANS BOARD ASSY | DWR1304 | DWR1304 | DWR1304 | |
| NSP | ├ POWER BOARD ASSY | DWR1305 | DWR1305 | DWR1303 | |
| NSP | ├ JOG BOARD ASSY | DWX1908 | DWX1908 | DWX1908 | |
| | ├ H.P BOARD ASSY | DWX1909 | DWX1909 | DWX1909 | |
| NSP | ├ REG BOARD ASSY | DWX1910 | DWX1910 | DWX1910 | |
| | └ MIDI BOARD ASSY | DWX1911 | DWX1911 | DWX1911 | |

## ■ CONTRAST OF PCB ASSEMBLIES

### POWER BOARD ASSY

DWR1305 and DWR1303 are constructed the same except for the following:

| Mark | Symbol and Description | Part No. | | Remarks |
|---|---|---|---|---|
| | | DWR1305 | DWR1303 | |
| ⚠ | S2 (VOLTAGE SELECTOR) | Not used | DSA1026 | |
| ⚠ | J2 (LEAD WIRE UNIT) | Not used | DDF1017 | |

## ■ PARTS LIST FOR KUC type

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **A** | **MAIN BOARD ASSY** | | |
| | **SEMICONDUCTORS** | | |
| | IC403 | | AK4520A |
| ⚠ | IC95 | (400mA/50V) | ICP-N10 |
| ⚠ | IC93, IC94 | (1.5A/50V) | ICP-N38 |
| ⚠ | IC92 | (250mA/50V) | ICP-N5 |
| | IC402 | | MB814800-70PJ |
| | IC401, IC404 | | MN19413A-P |
| | IC302, IC303 | | NJM2100M |
| | IC204, IC301, IC406, IC408 | | NJM4558MD |
| | IC203, IC205 | | NJM4580M |
| ⚠ | IC12 | | NJM78M12FA |
| ⚠ | IC13 | | NJM79M12FA |
| | IC405 | | SRM2B256SLMX70 |
| | Q201–Q204, Q207–Q210 | | 2SD2114K |
| | Q301, Q302 | | 2SD2114K |
| ⚠ | Q1 | | 2SD2395 |
| | Q205 | | DTA124EK |
| | Q206 | | DTC124EK |
| ⚠ | D11–D14 | | 11E2(TB2) |
| ⚠ | D15–D18 | | 1GWJ42(TPB2) |
| | D51 | | UDZS8.2B |
| | **COILS AND FILTERS** | | |
| | F405 | | DTF1013 |
| | L201, L202 | (100μH) | DTL1071 |
| | L11, L401–L403 | (100μH) | LFA101J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SWITCHES AND RELAYS** | | | |
| | S301 | | DSH1025 |
| **CAPACITORS** | | | |
| | C233, C238, C281, C282 | | CCSQCH101J50 |
| | C301–C304, C327–C330, C438 | | CCSQCH101J50 |
| | C444, C470, C471, C488, C489 | | CCSQCH101J50 |
| | C413, C414, C422, C423 | | CCSQCH220J50 |
| | C453, C454 | | CCSQCH220J50 |
| | C271, C272, C341–C344 | | CCSQCH270J50 |
| | C440, C445 | | CCSQCH331J50 |
| | C321, C322 | | CCSQSL152J50 |
| | C216, C217 | | CCSQSL561J50 |
| | C224–C227 | | CEANP220M16 |
| | C239, C240 | | CEANP2R2M50 |
| | C323 | | CEANP3R3M50 |
| | C305, C306 | | CEANP4R7M35 |
| | C291–C294 | | CEANPR33M50 |
| | C433 | | CEAT100M50 |
| | C251, C252 | | CEAT220M50 |
| | C313, C314 | | CEAT221M6R3 |
| | C214, C215 | | CEAT2R2M50 |
| | C351, C352 | | CEAT330M16 |
| | C52 | | CEAT3R3M50 |
| | C405, C407, C425, C427, C472 | | CEAT470M10 |
| | C474 | | CEAT470M10 |
| | C26, C261, C262, C27 | | CEAT471M16 |
| | C24 | | CEAT471M6R3 |
| | C311, C312 | | CEAT4R7M50 |
| | C51 | | CEHAQ471M10 |
| | C401, C458 | | CEJA101M10 |
| | C415, C448 | | CEJA470M10 |
| | C11–C17, C9 | | CKCYF103Z50 |
| | C19 | | CKCYF473Z50 |
| | C232, C237 | | CKSQYB102K50 |
| | C421, C452, C468, C473, C478 | | CKSQYB103K50 |
| | C222, C223, C235, C236 | | CKSQYB104K25 |
| | C295, C296, C309, C310 | | CKSQYB104K25 |
| | C315–C317, C319, C402, C406 | | CKSQYB104K25 |
| | C408–C412, C416, C419, C424 | | CKSQYB104K25 |
| | C426, C434, C439, C442 | | CKSQYB104K25 |
| | C449–C451, C455, C457, C459 | | CKSQYB104K25 |
| | C475–C477, C481, C485 | | CKSQYB104K25 |
| | C403, C466 | | CKSQYB105K10 |
| | C228–C231 | | CKSQYB122K50 |
| | C23, C25 | (3300µF/16V) | DCH1104 |
| | C21, C22 | (2200µF/25V) | DCH1117 |
| **RESISTORS** | | | |
| | R403, R404, R466–R468 | (82Ω/ 1/16W) | ACN7049 |
| | R307, R308, R349–R352 | | RN1/10SE1002D |
| | R301, R302, R311, R312 | | RN1/10SE1100D |
| | R272, R274 | | RN1/10SE1502D |
| | R347, R348 | | RN1/10SE2202D |
| | R220, R222 | | RN1/10SE2402D |
| | R341, R342 | | RN1/10SE3002D |
| | R353–R356 | | RN1/10SE3300D |
| | R211, R212 | | RN1/10SE4701D |
| | VR301 | (25kΩ-B x2) | DCS1049 |
| | Other Resistors | | RS1/10S□□□ J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **OTHERS** | | | |
| | | (HOLDER 5P) | 51048-0500 |
| | CN201 | (FFC CONNECTOR 22P) | 52045-2245 |
| | J201 | (JUMPER WIRE 5P) | D20PYY0505E |
| | JA301 | (MIC JACK) | DKN1189 |
| | X402 | (CRYSTAL RESONATOR 12.288MHz) | DSS1030 |
| | X401, X403 | (CERMIC RESONATER 20.2MHz) | DSS1111 |
| | CN3 | (JUMPER WIRE 4P) | KPC4 |
| | CN2 | (JUMPER WIRE 5P) | KPC5 |
| | JA201 | (PIN JACK 4P) | PKB1016 |
| | JA203, JA204, JA302 | (MIC JACK) | VKN1143 |
| | KN11 | (EARTH METAL FITTING) | VNF1084 |

## B REG BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SEMICONDUCTORS** | | | |
| ⚠ | IC11 | | PQ05RR12 |
| **OTHERS** | | | |
| | 11 | (CABLE HOLDER 4P) | 51052-0400 |
| | J11 | (JUMPER WIRE) | DXYY0410E |

## C TRANS BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **OTHERS** | | | |
| | | (CABLE HOLDER 5P) | 51052-0500 |
| | J4 | (JUMPER WIRE 4P) | DXYY0510E |

## D POWER BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **CAPACITORS** | | | |
| ⚠ | C3 | (4700pF/250V) | ACG7018 |
| ⚠ | C1, C2 | (10000pF/125V) | ACG7020 |
| **COILS AND FILTERS** | | | |
| ⚠ | L1 | | VTL-004 |
| **SWITCHE** | | | |
| ⚠ | S1 | | RSA1001 |
| **OTHERS** | | | |
| | H1, H2 | (FUSE CLIP) | AKR1004 |
| | | (TERMINAL 2P) | RKC-061 |
| ⚠ | J1 | (LEAD WIRE UNIT) | DDF1016 |
| ⚠ | J3 | (LEAD WIRE UNIT) | DDF1018 |
| | | (PCB BINDER) | VEF1040 |

## E SOUSA BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SEMICONDUCTORS** | | | |
| | IC702 | | LB1740 |
| | IC703 | | NJM4556AD |
| | IC701 | | PE5021B |
| | IC704, IC705 | | TC74HC174AF |
| | Q702, Q704, Q706 | | 2SA1036K |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | Q717–Q727 | | 2SC2412K |
| | Q707–Q716 | | 2SD2114K |
| | Q701, Q703, Q705 | | DTC124EK |
| | D701–D705, D707–D711 | | 1SS355 |
| | D745–D747, D776–D782, D784 | | BR5064X |
| | D792–D794 | | BR5064X |
| | D749, D751, D758, D760, D762 | | BR5074X |
| | D764 | | BR5074X |
| | D748, D750, D757, D759, D761 | | BR5364X |
| | D763, D765 | | BR5364X |
| | D754, D789 | | BR5374X |
| | D740–D743, D785–D788 | | SLP3118C51H |
| | D730–D739, D766–D775 | | SLP4118C51H |
| | D744, D752, D756, D791 | | SLP9118C51H |
| **SWITCHES** | | | |
| | S734 | | DSG1046 |
| | S701 | | DSX1054 |
| | S710–S724, S726–S733 | | VSG1008 |
| **CAPACITORS** | | | |
| | C711, C712, C715, C716 | | CCSQCH270J50 |
| | C714 | | CEAL101M6R3 |
| | C702, C709 | | CEAL470M6R3 |
| | C808, C809 | | CEJA101M16 |
| | C713 | | CEJA470M10 |
| | C801, C802 | | CEJANP470M16 |
| | C701, C703–C708, C710 | | CKSQYB103K50 |
| | C717, C718, C721–C727 | | CKSQYB103K50 |
| | C731, C732, C740–C743 | | CKSQYB103K50 |
| | C803, C804 | | CKSQYB103K50 |
| **RESISTORS** | | | |
| | R814–R817 | | RD1/4VM301J |
| | VR701 | (10kΩ-B) | DCS1045 |
| | VR801 | (10kΩ-B x2) | DCS1046 |
| | VR702–VR704 | (10kΩ-B) | DCS1047 |
| | VR705–VR707 | (10kΩ-B) | DCS1048 |
| | Other Resistors | | RS1/10S□□□ J |
| **OTHERS** | | | |
| | | (CABLE HOLDER 3P) | 51048-0300 |
| | | (CABLE HOLDER 5P) | 51048-0500 |
| | CN701 | (CONNECTOR 22P) | 52492-2220 |
| | J703 | (JUMPER WIRE 3P) | D20PYY0305E |
| | J801 | (JUMPER WIRE 5P) | D20PYY0510E |
| | X701 (CRYSTAL RESONATOR 5.0MHz) | | DSS1106 |
| | CN702, CN703 | | TKC-A08P-A1510E |

## F JOG BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SWITCHE** | | | |
| | S901 | | DSX1051 |
| **OTHERS** | | | |
| | CN903 | (JUMPER CONNECTOR 3P) | 52151-0310 |

## G MIDI BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SEMICONDUCTORS** | | | |
| | IC603 | | BU4066BCF |
| | IC602 | | PC900V |
| | IC601 | | TC74HCU04AF |
| | D601–D603 | | 1SS355 |
| **CAPACITORS** | | | |
| | C602–C605 | | CKSQYB103K50 |
| | C601 | | CKSQYB105K10 |
| **RESISTORS** | | | |
| | R601, R602, R607 | | RD1/4PU221J |
| | Other Resistors | | RS1/10S□□□ J |
| **OTHERS** | | | |
| | JA601, JA602 | (DIN CONNECTOR) | DKN1188 |
| | KN601 | (EARTH METAL FITTING) | VNF1084 |
| | CN605 | (CONNECTOR) | 52151-0510 |

## H 7SEG BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **SEMICONDUCTORS** | | | |
| | D901–D907 | | NKR131S |
| | D911–D916 | | SML-210JT |
| **RESISTORS** | | | |
| | All Resistors | | RS1/10S□□□ J |
| **OTHERS** | | | |
| | CN901, CN902 | (CONNECTOR) | TKC-A08X-B1 |

## I H.P BOARD ASSY

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **COILS AND FILTERS** | | | |
| | L803–L805 | | VTL1105 |
| **SWITCHE** | | | |
| | S801 | | DSH1048 |
| **CAPACITORS** | | | |
| | C805, C807 | | CKSQYB103K50 |
| | C806 | | CKSQYB473K50 |
| **RESISTORS** | | | |
| | All Resistors | | RS1/10S□□□ J |
| **OTHERS** | | | |
| | CN801 | (JUMPER CONNECTOR 5P) | 52147-0510 |

# 6. ADJUSTMENT

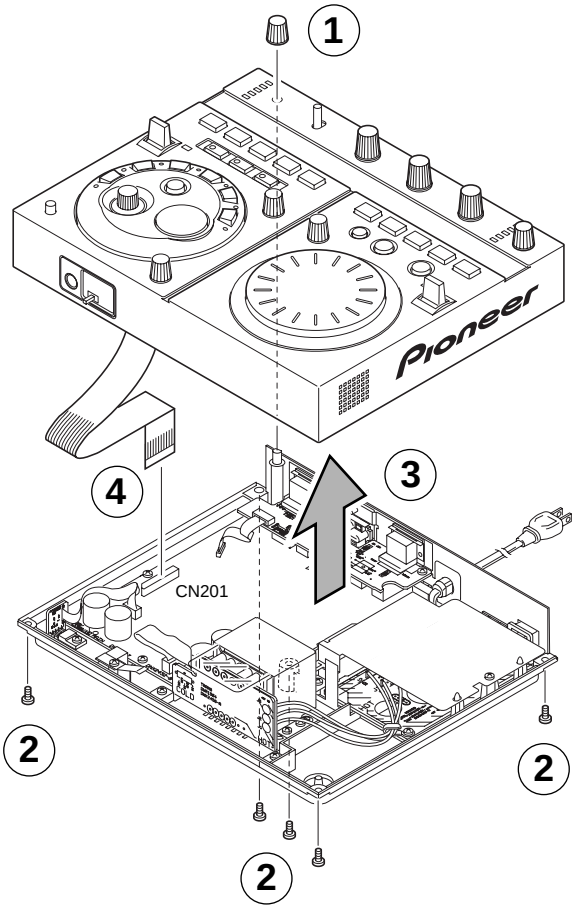
**There is no information to be shown in this chapter.**

# 7. GENERAL INFORMATION

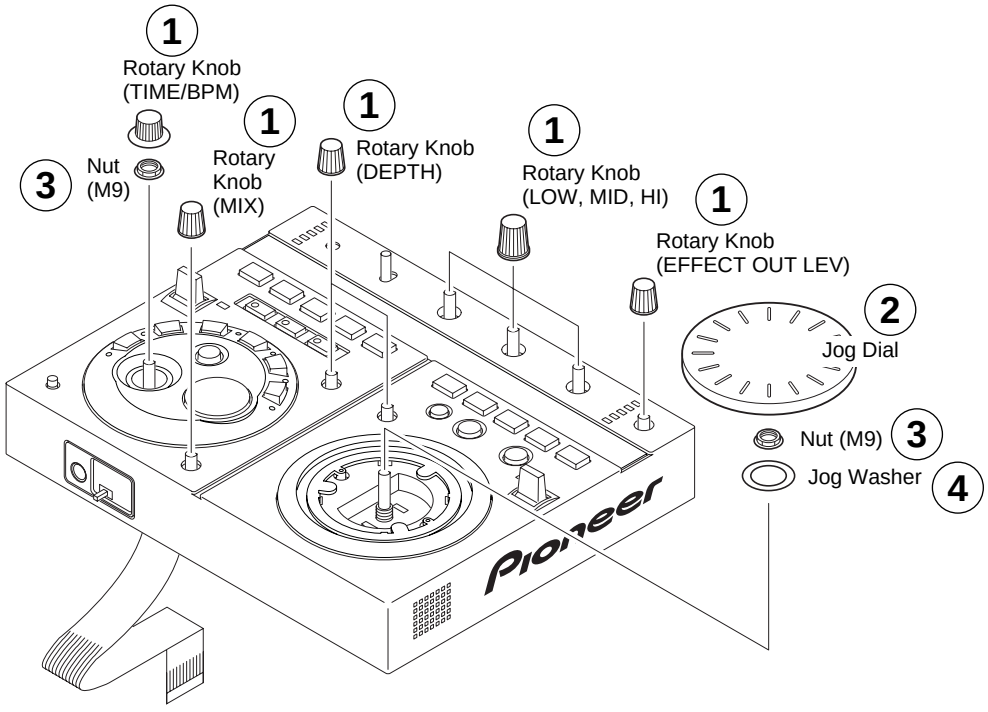
## 7.1 DIAGNOSIS

### 7.1.1 DISASSEMBLY

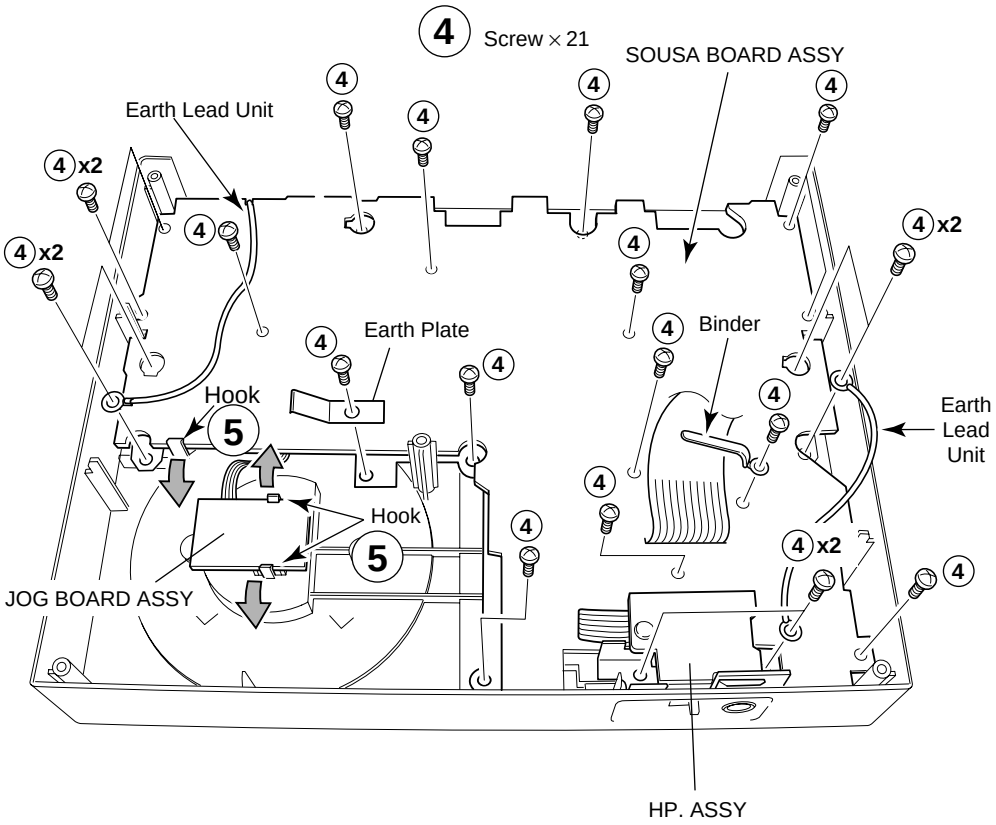
■ **BOTTOM SECTION**




■ **FUNCTION SECTION (1)**

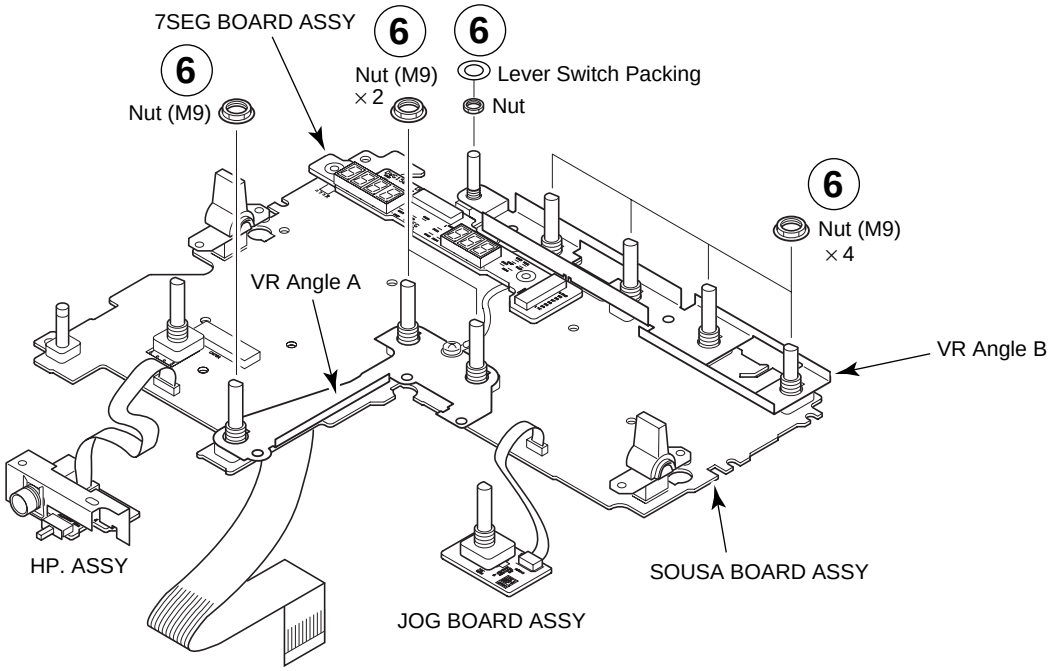


## ■ FUNCTION SECTION (2) SOUSA BOARD ASSY



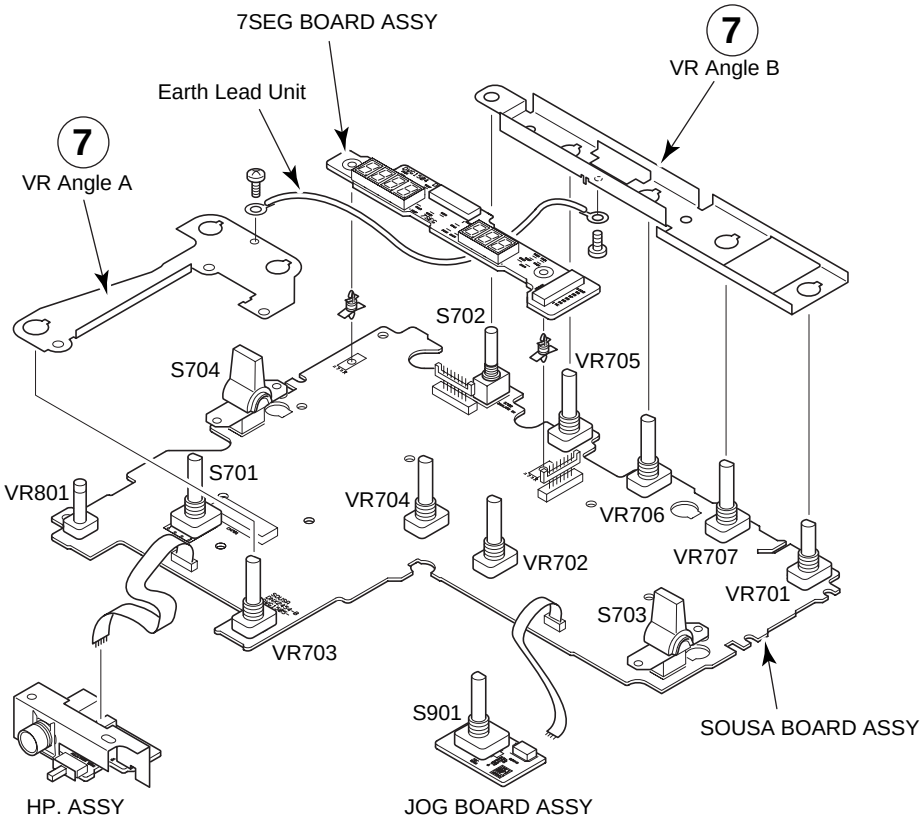

## ■ FUNCTION SECTION (3)

### ● Volume Exchange Method (1/2)



## ■ FUNCTION SECTION (4)

### ● Volume Exchange Method (2/2)



## 7.1.2 TEST MODE

1. Entry into Test Mode

Switch on the power while pressing 1/4 and 1/1 of the beat switch. (Refer to Fig 1)

- With correct entry into test mode, "F ." is displayed on the BPM display.
- When the beat switch is released, the unit automatically enters into mode 1 and the BPM display becomes "F_1".

2. Explanation of each Mode and Setting Method

2.1 Explanation of each mode

Mode 1 ... The LED self-illuminating button, the LED coupled to the lever switch, and the effect time display coupled to the time button are checked.
Mode 2 ... MIDI LED and BPM mode switch are checked.
Mode 3 ... The LEDs other than mode 1 are checked.

2.2 Setting method

Mode switching is done with the BPM mode switch. Each time the switch is pressed, switching is done in the order of mode 1= mode 2 = mode 3 = mode 1 ...
From any mode, mode 3 is reached by pressing the tap button.
The LED (1/1) of the beat switch lights when the mode shifts from mode 3 to mode 1.

3. Check Methods in each Mode and their Points

3.1 Mode 1

Mode 1 is reached by the following operations A and B.

A. When test mode is entered and the beat switch (1/4 and 1/1) is released.
B. When the BPM mode switch is pressed once in mode 3.
At this time, "3210" is displayed a the effect time display position, and "F_1" is displayed at the BPM display position.

- The "F_1" display permits confirmation that the 7 segments are not short-circuited.

3.1.1 Check method

Of the following switches, only the effect selection button flashes when the switch is pressed.
All other switches light when the switch is pressed and go out when the switch is pressed again.

3.1.2 Check points

Effect selection button
Frequency selection button
Beat effect ON switch
Beat switch (1/4 ~ 4/4)
Effect time button and effect time display (* All four digits of the display count up at the same time.)
Hold button
Play button
Jog effect ON switch

3.2 Mode 2

Mode 2 is entered when the BPM switch is pressed in mode 1.
At this time, the effect time display goes out and "F_2" is displayed on the BPM display.

3.2.1 Check contents

Mode switching with the BPM mode switching switch. (The MIDI LED lights.)
Note: Some of the LEDs lit in mode 1 may not go out, but this is not a defect.

### 3.3 Mode 3

Mode 3 is reached by the following operations A and B.

A. When the BPM switch is pressed in mode 2.
At this time, "0000" is displayed on the time display, and "000" is displayed on the BPM display.

B. When the tap switch is pressed in mode 1 or mode 2.
At this time, "1111" is displayed on the time display, and "111" is displayed on the BPM display.

#### 3.3.1 Check method

When the tap switch is hit, the following indications change.

| Checked indication | Description |
|---|---|
| Input level meter | Lights one by one from the bottom. |
| Effect out level meter | Lights one by one from the bottom. |
| Effect time display | Number display is performed with all four digits counting up simultaneously. |
| BPM display | Number display is performed with all three digits counting up simultaneously. |
| Beat LED | Lights one by one from the left. |
| Jog meter | Lights one by one from the left. |

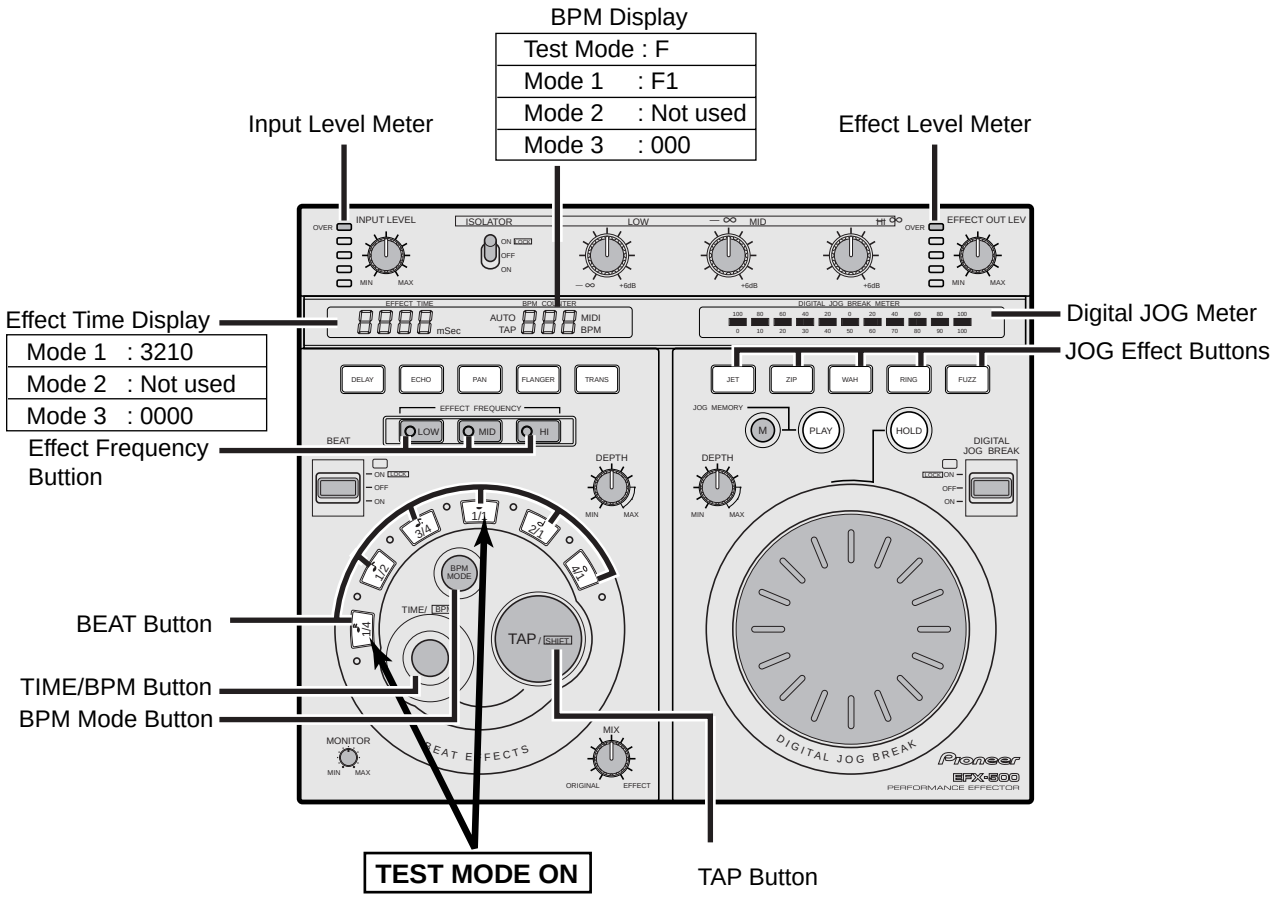
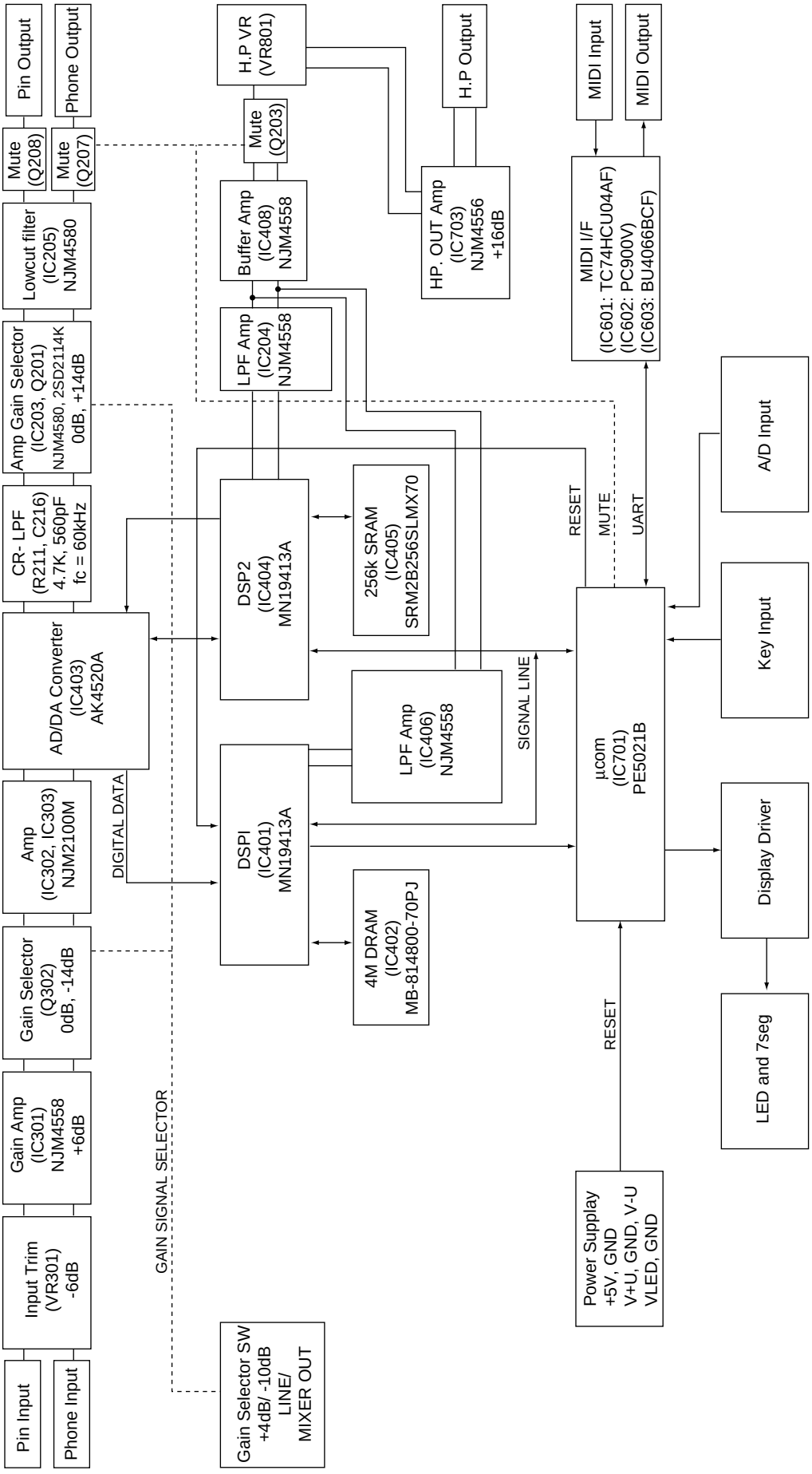


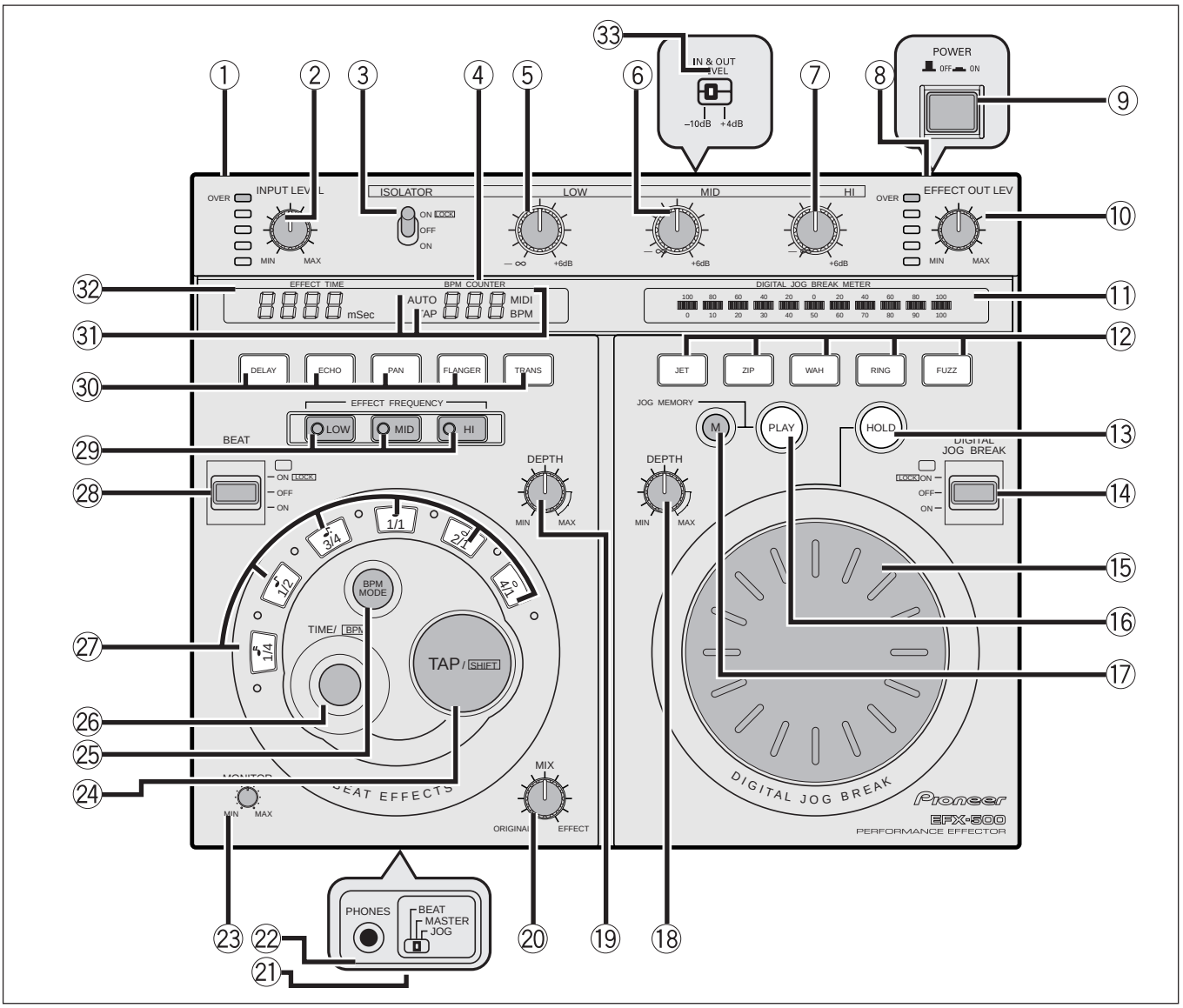

Fig 1

## 7.2 BLOCK DIAGRAM



# 8. PANEL FACILITIES AND SPECIFICATIONS

## 8.1 PANEL FACILITIES




(1) Input Level Meter
Indicates the input level. The “OVER” indicator lights when the input level is set too high.

(2) INPUT LEVEL Adjust Dial
Adjusts the input level in the range – to +6 dB.

(3) ISOLATOR Lever Switch
Turns the isolator on and off. At the center position the isolator is OFF (through) and at the rear position it is ON and locked. The isolator is temporarily ON when moved to the front position and returns to the center (OFF) position when released.

(4) BPM COUNTER
Gives a numeric BPM (beats per minute) indication. The counter flashes when a BPM measurement cannot be made.

(5) ISOLATOR LOW Adjustment Dial
Adjusts the bass of the input source. The sound is flat at the center clicked position and is cut (no sound) at the – position.

(6) ISOLATOR MID Adjustment Dial
Adjusts the mid-range of the input source. The sound is flat at the center clicked position and is cut (no sound) at the – position.

(7) ISOLATOR HI Adjustment Dial
Adjusts the treble of the input source. The sound is flat at the center clicked position and is cut (no sound) at the – position.

(8) Effect Output Level Meter
Indicates the effect output level. The “OVER” indicator lights when the output level is set too high.

(9) POWER Switch
The POWER switch is located on the rear panel.

(10) Effect Output Level Adjust Dial (EFFECT OUT LEV)
Adjusts the effect output level in the range – to +6 dB.

⑪ DIGITAL JOG BREAK METER
Indicates the amount of control applied with the Jog dial.

⑫ Jog Effect Select Buttons
(JET/ZIP/WAH/RING/FUZZ)
Press to select one of 5 effects (JET, ZIP, WAH, RING or FUZZ). The selected button flashes.

⑬ HOLD button
Press the button to light it and the effect currently applied to the sound will continue after the jog dial stops rotating.

⑭ DIGITAL JOG BREAK Lever Switch
(ON/OFF/LOCK-ON)
The Digital Jog Break sound is output when this switch is set to ON. The function is OFF when the switch is set to the center position (through). It is ON and locked at the rear position and is ON temporarily at the front position (the switch returns to the center position when released).

⑮ DIGITAL JOG BREAK Dial
The speed of Jog dial rotation changes the amount of control applied to each effect.

⑯ JOG MEMORY PLAY Button
Reproduces the effect created with the Jog dial that was stored in memory.

⑰ JOG MEMORY Button (M)
Holding down this button when the Jog dial is rotated stores up to 8 seconds worth of effects created with the dial. The PLAY button ⑯ lights when effects have been saved to memory.

⑱ Digital Jog Break Effect Depth Dial
(DEPTH)
Adjusts the depth of the Digital Jog Break effect.

⑲ Beat Effect Depth Dial (DEPTH)
Adjusts the depth of the Beat effect.

⑳ MIX Dial
Sets the balance between the original sound and the created effect.

㉑ Headphone Monitor Select Switch
(BEAT/MASTER/JOG)
This switch is located on the front panel of the unit.
Selects the source to be monitored in the headphones.
BEAT: monitors the beat effect.
MASTER: monitors the master output.
JOG: monitors the effects created with the Digital Jog Break (and the beat effect when the BEAT EFFECTS Lever Switch ㉘ is ON).

㉒ Headphone Jack (PHONES)
This jack is located on the front panel.
Connect a headphone (with a 1/4-inch/6.3 mm stereo plug) to this jack.

㉓ Headphone Monitor Level Dial (MONITOR)
Adjusts the headphone sound level.

㉔ Tap button (TAP/SHIFT)
BPM can be input manually by tapping the TAP button two times or more in time with the beat (quarter note). When the TIME dial ㉖ is turned while this button is held down, you can directly control BPM manually.

㉕ BPM Measurement Mode Button (BPM MODE)
Selects the BPM measurement mode (AUTO/MIDI/TAP)
AUTO: makes automatic measurements from the input music signal.
MIDI: measures BPM from the MIDI signal (timing clock) input to the MIDI IN terminal.
TAP: performs manual input of BPM when the TAP button is tapped. Pressing the TAP button in AUTO or MIDI mode changes the mode to the TAP mode.

㉖ Time Dial (TIME/BPM)
Turn this dial to set the beat effect time. When the beat effect time is changed, the indicator on the Beat Select button changes to the set position. The desired BPM setting can be made by turning the TIME/BPM dial ㉖ while holding down the TAP/SHIFT button ㉔. When the BPM MODE button ㉕ is also pressed, BPM can be set in 0.1 increments.

㉗ Beat Select Buttons
(1/4, 1/2, 3/4, 1/1, 2/1, 4/1)
Selects the beat with which the beat effect will be synchronized. When a Beat Select button is pressed, the BPM (beats per minute) effect time is automatically set. “1/1” is selected for BPM in the TAP mode. At power on BPM is set to 120 and “1/1” is selected.

㉘ BEAT EFFECTS Lever Switch
(ON/OFF/ON-LOCK)
The beat effect sound is output when this switch is set to ON. The effect is set to OFF (through) at the center position and is ON and locked at the rear position. The effect is temporarily ON when set to the front position (the switch returns to the center position when released).

㉙ EFFECT FREQUENCY Select Buttons
(LOW/MID/HI)
Selects the frequency range to which the Beat effect is to be applied. Press the button to turn it on and off. The indicators of the selected ranges light when on. No effect is generated when all buttons are set to off.

㉚ Effect Select Buttons
(DELAY/ECHO/PAN/FLANGER/TRANS)
Select one of 5 effects (DELAY, ECHO, PAN, FLANGER or TRANS). The selected button flashes.

㉛ BPM Measurement Mode Indicators
(AUTO/MIDI/TAP)
Indicates BPM measurement mode.

㉜ EFFECT TIME Display
Indicates the effect time (in ms) set with the TIME dial or Beat select button.

㉝ IN & OUT LEVEL switch (+4 dB/–10dB)
This switch is located on the rear panel.

# 8.2 SPECIFICATIONS

1. General

Power supply ..... KUC : 120 V AC, 60 Hz
..... WY : 220 - 240V AC, 50/60Hz
..... RL : 110 - 120/ 220 - 240V AC, 50/60Hz
Power consumption ..... 14 W
Operating temperature ..... +5°C to +35°C
(+41°F to +95°F)
Weight ..... 2.0 kg (4.4 lb)
Maximum external dimensions
..... 277.1 (W) x 225.1 (D) x 83.5 (H) mm
10-29/32 (W) x 8-7/8 (D) x 3-5/16 (H) in.

2. ..... Audio Unit

Sampling rate ..... 48 kHz
A/D, D/A Resolution ..... 20 bits
Frequency characteristics ..... 20 Hz to 22 kHz
S/N ratio ..... 83 dB
Total harmonic distortion ..... 0.01 % or less
Input level ..... –10 dBu / +4 dBu (22 kΩ)
Output level ..... –10 dBu / +4 dBu
..... (RCA pin jacks: 1 kΩ, Phone jacks: 600 Ω)
..... –10 dBu / +4 dBu is switchable.
Number of channels ..... 2 channels (stereo)

3. Input/Output terminals

Audio line output terminal
RCA pin jacks ..... 2
Phone jacks (1/4-inch/6.3 mm in diameter) ..... 2
Audio line input terminal
RCA pin jacks ..... 2
Phone jacks (1/4-inch/6.3 mm in diameter) ..... 2
MIDI output terminal (5-pin DIN) ..... 1
MIDI input terminal (5-pin DIN) ..... 1
Headphone output terminal
(1/4-inch/6.3 mm in diameter, stereo) ..... 1

4. Accessories

Operating instructions ..... 1
Guide plate ..... 1
Warranty card ..... 1

*NOTE:*
*Specifications and design are subject to possible modification without notice.*